

SNAKE RIVER BASIN FALL CHINOOK SALMON RUN RECONSTRUCTION AS A BASIS FOR MULTISTAGE STOCK RECRUITMENT MODELING WITH COVARIATES

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Multistage stock recruitment modeling is a useful tool for analyzing population growth because it allows for partitioning effects of environment and density dependence among life stages. Presently, there is some evidence for density dependent population growth, but the data that provide this evidence are only indices of adult and juvenile abundance. Ideally, input to multistage stock recruitment models would include measures of annual adult abundance, annual juvenile abundance, and covariates that influence population growth. In this chapter, we briefly describe methods in late stages of development for estimating passage abundance of natural Snake River basin fall Chinook adults and juveniles at Lower Granite Dam (a.k.a., run reconstruction). We refer to a fish as being of natural origin if it was produced by spawning in the wild. The adult run and juvenile run reconstruction teams include biologists and biometricians from the Idaho Power Company, Nez Perce Tribe Department of Fisheries Resources Management, NOAA Fisheries, U.S. Fish and Wildlife Service, U.S. Geological Survey, and the Washington

Department of Fish and Wildlife. Our ongoing project will use adult and juvenile run reconstruction together for the first time. Future coordination between teams will standardize terminology and methods. The efforts of these teams will hopefully provide annual abundance data for input to two-stage stock recruitment models in the near future. The present years of interest are 1990–2012 and 1991–2013 for adults and juveniles, respectively. Additional out years of data will be added pending data and funding availability. The full proposal was recently reviewed by the ISAB.