

Guidelines For Use Of Captive Broodstock in Recovery

Herbert A. Pollard II

NOAA Fisheries Northwest Region
Salmon Recovery Division
Hatcheries/Inland Fisheries Branch
10215 West Emerald Street
Boise, Idaho, 83704

Herbert.Pollard@noaa.gov 208-378-5614

Thomas A. Flagg

NOAA Fisheries

Northwest Fisheries Science Center
Resource Enhancement and Utilization Technologies Division
Manchester Research Station
PO Box 130
Manchester, Washington, 98353
tom.flagg@noaa.gov 360-871-8306

A number of stocks of anadromous salmonids in the Pacific Northwest are currently listed by the National Marine Fisheries Service (NMFS) as threatened or endangered under the U.S. Endangered Species Act (ESA). The ESA recognizes that conservation of listed species may be facilitated by artificial captive broodstocks, while factors impeding population recovery are identified and corrected. Captive broodstock programs differ from conventional salmon culture in that fish of wild origin are maintained in captivity throughout their life to produce offspring for the purpose of supplementing wild populations. The relatively short generation time (2-7 years) and potential to produce large numbers of offspring (1,500-5,000 eggs per female average depending on the species) make Pacific salmon ideal for captive broodstock rearing. However, the technology is not without potential complications and risks. The paper presents guidelines to ensure a sound basis for implementation of captive broodstocks. Considerations must be based on overall knowledge of survival, reproductive success, and offspring fitness to accurately determine levels of risk in implementing a salmonid captive broodstock program. In general, use of captive broodstocks should be restricted to situations where the natural population is dangerously close to extinction. Proper precautions should be taken to minimize genetic impacts during the collection, mating, and rearing of captive broodstocks, as any alteration to the original genetic composition of the population in captivity may reduce the efficacy of supplementation in rebuilding the natural population. Furthermore, liberation of fish from captive broodstocks should be consistent with the known behavior of existing wild fish and on whatever knowledge is available of the life-history characteristics of the wild fish. Because the benefits and risks have not been established through long-term monitoring and evaluation, captive broodstock development should be considered an experimental approach and used with caution.