

AN AUGMENTATION PLAN FOR COLORADO PIKEMINNOW IN THE SAN JUAN RIVER

ADDENDUM # 1: STOCKING AGE-1 FISH TO SUPPLEMENT ONGOING AUGMENTATION EFFORTS

Final Report

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INTRODUCTION

In 2003, *An Augmentation Plan For Colorado Pikeminnow In The San Juan River* (hereafter to referred as the “Plan;” Ryden 2003) was finalized. This Plan called for annually stocking $\geq 300,000$ age-0 Colorado pikeminnow (*Ptychocheilus lucius*) into the San Juan River for seven years (2003-2009) in order to facilitate establishing a population of ≥ 800 adult Colorado pikeminnow in the San Juan River between the Animas River confluence and Lake Powell (i.e., within the riverine portion of Colorado pikeminnow Critical Habitat in the San Juan River). The first stocking that occurred under auspices of this plan actually took place in October of 2002, while the Plan was still in draft form. At the time the Plan called for 250,000 age-0 fish to be stocked annually (this number was increased to $\geq 300,000$ age-0 fish in final version of the Plan). In the summer of 2002, a contract was established with Dexter National Fish Hatchery to provide age-0 Colorado pikeminnow for stocking throughout the duration of this augmentation effort.

Between 2002 and 2004, a total of 666,346 age-0 Colorado pikeminnow from Dexter NFH were stocked into the San Juan River (Table 1). The Plan called for 850,000 age-0 fish to be stocked over this same time period. This represented a shortfall of 183,654 (21.61%) fish over the three-year period (Ryden 2004, 2005a In Prep).

In addition to stocking age-0 fish between 2002 and 2004, the San Juan River Recovery Implementation Program (SJRIP) obtained two lots of Colorado pikeminnow from the J. W. Mumma Native Species Hatchery (Mumma) in Alamosa, CO. These consisted of 1,005 age-1 fish (2002 year-class) stocked into the San Juan River on 6 November 2003 (Ryden 2004) and another 1,219 age-2 fish (2002 year-class) stocked on 9 June 2004 (Table 1; Ryden 2005a In Prep). These Mumma fish were excess fish from the Colorado pikeminnow augmentation efforts that were ongoing in the Upper Colorado River Basin. While the recapture rate among Mumma fish stocked in 2003 (i.e. age-1) is low, the short-term recapture rate among Mumma fish stocked in 2004 (i.e., age-2’s) was relatively high (1.06% of all Mumma fish stocked in June 2004 were recaptured during the fall 2004 *Sub-Adult and Adult Large Bodied Fish Community Monitoring* trip; Ryden 2005b In Prep.). In total, 70 (5.74%) age-2 Mumma fish from the 2004 stocking were recaptured during all 2004 field studies (SJRIP Integrated Database).

Table 1. Stockings of Colorado pikeminnow in the San Juan River, 2002-2004.

Date	Number Stocked	River Mile Stocked At	Mean Total Length (mm)	Range Of Total Lengths (mm)	Responsible Agency ^a
10/24/2002	105,209	180.2	51	32-127	USFWS
10/24/2002	105,209	158.6	51	32-127	USFWS
11/06/2003	175,928	188.35 to 148.5	58	38-100	USFWS & BIO/WEST
11/06/2003	1,005	180.2	180	125-280	CDOW
06/09/2004	1,219	180.2	218	144-278	CDOW
10/21/2004 & 10/28/2004	280,000	188.35 to 148.5	50	35-116	USFWS & BIO/WEST

^a USFWS = U.S. Fish and Wildlife Service - Colorado River Fishery Project, Grand Junction, Colorado; BIO/WEST = BIO/WEST, Inc., Logan, Utah; CDOW = Colorado Division of Wildlife, J.W. Mumma Native Species Hatchery, Alamosa, Colorado

JUSTIFICATION FOR CHANGE TO AUGMENTATION PLAN

The SJRIP operates under an approach known as “Adaptive Management.” The Adaptive Management approach lets the SJRIP Biology and Coordination Committees make appropriate modifications to annual workplans, field studies, monitoring and augmentation programs, and guiding documents, as new information becomes available that would suggest that a change would be advantageous in helping to more quickly and efficiently achieve the recovery of the two San Juan River endangered fishes (i.e., Colorado pikeminnow and razorback sucker {*Xyrauchen texanus*}).

Several factors led the SJRIP Biology Committee to decide that it would be advantageous to pursue stocking a second group of larger juvenile Colorado pikeminnow in addition to the scheduled annual stockings of age-0 fish. First among these was the shortfall in numbers of age-0 fish being produced annually at Dexter NFH between 2002 and 2004. Second was the advantage of having Mumma fish available to the SJRIP that were big enough to be individually PIT-tagged before being stocked. PIT-tagged fish allow researchers to determine the exact date and location at which a fish was stocked, determine age and growth, document post-stocking dispersal and movements, etc. Third was the relatively high short-term recapture rates observed among the 2004 stocking of age-2 Mumma fish. The age-2 Mumma fish, stocked in June 2004, seemed to have survived in larger numbers than expected and these fish moved into several new habitats that were previously unexploited by stocked age-0 fish (e.g., five of these age-2 Colorado pikeminnow were recaptured in the lower Animas River in July 2005). Lastly, augmentation efforts among razorback sucker have shown a much higher post-stocking survival and retention rate among fish stocked at ≥ 300 mm TL than for fish stocked at smaller sizes (Ryden 2000a, 2000b).

At their 5 April 2005 meeting, the SJRIP Biology Committee decided to stock 3,000 age-1 Colorado pikeminnow annually, beginning in the fall of 2006. These 3,000 age-1 fish will be in addition to the $\geq 300,000$ age-0 fish that are still scheduled to be stocked, as per the 2003 Colorado pikeminnow augmentation plan.

METHODS

A total of 3,000 age-1 Colorado pikeminnow (150 mm TL) will be reared at Dexter NFH (as per their modified workplan, dated 6 April 2005) and will be delivered annually (2006-2009) to the San Juan River for stocking. These age-1 fish will be delivered at the same time as are the age-0 Colorado pikeminnow. After a slow (several hour) tempering process, the Colorado pikeminnow will be transferred to stocking rafts equipped with aerated live-wells. Age-1 and age-0 Colorado pikeminnow will be held in separate tanks both during transport to the river (i.e., in stocking trucks) and transport downriver via rafts, in order to help minimize the potential of cannibalism. Age-1 and age-0 Colorado pikeminnow will be transported downstream and stocked into appropriate low-velocity habitat types (backwaters, embayments, quiet low-velocity shorelines, brush piles, etc.) within approximately the first ten river miles (RM) downstream of

the delivery point. These stocking sections will consist of RM 180.2-170.0 (the “Farmington to Hatch Trading Post” section) and RM 158.6-148.5 (the “Hogback Diversion to Shiprock” section). Age-1 and age-0 Colorado pikeminnow will be stocked into sites that are mutually exclusive of one another, again to decrease the possibility of cannibalism. Stocking and follow-up monitoring of age-1 Colorado pikeminnow will follow guidelines set forth in the SJRIP’s long-term monitoring protocols (Propst et al. 2000) and existing workplans.

Other than this addition of 3,000 age-1 fish to be stocked annually, the workplans and guidelines governing the annual stocking of $\geq 300,000$ age-0 Colorado pikeminnow over the next five years (2005-2009) have remained the same and will be governed by existing workplans and monitoring protocols, barring further addendums to the 2003 Colorado pikeminnow augmentation plan.

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