ABSTRACT

Shinumo Creek Humpback Chub Translocation Monitoring - 2010

Colorado Plateau Cooperative Ecosystem Studies Unit
(Cooperative Agreement # H1200-09-0005)
Grand Canyon National Park

Submitted by:

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The Museum of Northern Arizona (MNA), under this cooperative agreement (# H1200-09-0005), has successfully completed the tasks outlined below. This abstract will fulfill MNA's obligations under this agreement.

1. Participated in monthly conference calls to discuss aspects of humpback chub translocations, such as logistics, monitoring, results, and scheduling.
2. Two monitoring trips were conducted during 2010. Shinumo monitoring trips in 2010 included June 16-28 and September 8-15. MNA provided one fisheries biologist and one fisheries technician for both trips.
3. Following each of the two monitoring trips, MNA prepared a trip report, in cooperation with NPS staff that included a description of logistical aspects of the trip, monitoring work completed, results, photos, and any suggestions for future monitoring trips.
4. MNA participated in review of the final annual report.
5. MNA prepared an abstract of the 2010 Shinumo Creek Translocation project report.

The 2010 Shinumo Creek Translocation final report summarized progress towards translocations of humpback chub to Grand Canyon tributaries, outside of the Little Colorado River, through fiscal year 2010. The purpose of this project is to partially fulfill Reclamation's commitment under the 2008 Biological Opinion on operation of Glen Canyon Dam to establish population redundancy of humpback chub (*Gila cypha*) in tributary refuges in Grand Canyon National Park:

The overall goal of this project is to translocate wild, young-of-year humpback chub from the Little Colorado River to Shinumo, Havasu, and Bright Angel Creeks over a period of four years (2009-2014). Removal of non-native fish species is an important pre-cursor to translocations in all three tributaries, particularly Bright Angel, which has a large population of non-native trout.

Through June, 2010, two translocations of 302 and 300 juvenile humpback chub have taken place (in 2009 and 2010, respectively) to Shinumo Creek. In accordance with the translocation plan developed for Shinumo Creek, a third translocation is planned for 2011.

The National Park Service, Museum of Northern Arizona, Utah State University, Arizona Game and Fish Department, Bureau of Reclamation, and the University of Missouri, participated in field trips to Shinumo Creek to monitor the status of the 2009 translocated humpback chub in June and September, 2010. The purpose of this monitoring was to collect data to assess survival and growth, as well as the distribution and retention of translocated humpback chub in Shinumo Creek using hoop nets and minnow traps. Electro-fishing was also conducted to attempt to improve survival of humpback chub by removing non-native rainbow trout and monitor populations of native and non-native fish upstream of the translocation reach.

Four fish species were captured in Shinumo Creek; translocated *Gila cypha*, humpback chub (HBC); native *Catostomus discobolus*, bluehead sucker (BHS); native *Rhinichthys osculus*, speckled dace (SPD); and nonnative *Onchorynchus mykiss*, rainbow trout (RBT). Two additional species were captured below Shinumo Falls: native *Catostomus latipinnis*, flannelmouth sucker (FMS) and nonnative *Salmo trutta*, brown trout (BNT).

In June there were 2,980 SPD captures, followed numerically by 522 RBT, 408 BHS, 29 HBC, 5 FMS, and 1 BNT. Five FMS and 1 BNT were captured below Shinumo Falls. In September SPD were again the most commonly collected fish at 5,171 followed by 388 RBT, 115 BHS, 95 HBC captures, and 1 BNT below the Falls. Overall in 2010, SPD represented 73% of the Shinumo Creek captures, followed by 17% RBT, 10% BHS, and <1% HBC.

Three hundred HBC were translocated into Reach 4 of Shinumo Creek on June 23, 2010. Fish were transported in a hatchery truck to the South Rim of Grand Canyon from the U.S. Fish and Wildlife Service's Dexter National Fish Hatchery and Technology Center in Dexter, New Mexico. Population estimates for HBC generated using mark-recapture analysis were 33 and 192 for June and September, respectively.

Larger HBC (> 130 mm TL) were more likely to leave the system compared to HBC that remained. Also, HBC tended to emigrate from the system at night, and immediately following translocation events in June 2009 and 2010. Preliminary results indicated maximum daily stream temperature and stage height were not correlated with emigration from Shinumo Creek.

A total of 910 RBT were removed from Shinumo Creek and below Shinumo Falls in 2010 by angling (261), electro-fishing (538), seining (10), mini hoop-nets (97) and minnow traps (4). We consumed 171 (33%) out 522 rainbow trout and 1 brown trout (captured below Shinumo Falls in June), removed by the fisheries crew using two backpack electro-fishing units, seining, mini-hoop nets, minnow traps, and angling. In September, 151 out of 388 (39%) rainbow trout were consumed.