



United States Department of the Interior

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November 03, 2023

Kathleen Callister
LTEMP SEIS Project Manager
Bureau of Reclamation
125 South State Street, Suite 800
Denver, CO 80225

Dear Ms. Callister:

The U.S. Fish and Wildlife Service (Service) appreciates this opportunity to comment on the Bureau of Reclamation's (Reclamation) October 4th, 2023, Notice of Intent (NOI) to Prepare a Supplemental Environmental Impact Statement (SEIS) for the Glen Canyon Dam (GCD) Long-Term Experimental and Management Plan (LTEMP; Reclamation 2023b). This SEIS will replace a previously published Environmental Assessment (EA) (Reclamation 2023a). We provided written comments to that EA (U.S. Fish and Wildlife Service 2023b), and these public scoping comments are additive to that effort and ongoing conversations. There is a long consultation history between the Service and Reclamation involving operations at GCD. A full list of consultations is on file in the Arizona Ecological Services Field Office. Consultation histories and summaries can also be found in the 2016 Biological Opinions for the LTEMP.

The following are comments concerning the October 4, 2023, NOI, and are organized topically for ease of review.

Purpose and Need

As stated in your NOI "*the purpose of the LTEMP SEIS is for Reclamation to analyze additional flow options at Glen Canyon Dam in response to invasive smallmouth bass and other warmwater nonnatives recently detected directly below the dam. The need is to prevent the establishment of*

smallmouth bass below the Glen Canyon Dam (by preventing additional spawning), which could threaten core populations of threatened humpback chub in and around the Little Colorado River and its confluence with the Colorado River mainstem” and “including the latest scientific information to improve Reclamation’s ability to implement HFEs as originally intended in the LTEMP EIS” with an emphasis on “adjusting sediment accounting periods and HFE implementation windows”. The Service acknowledges the challenges presented in the operation and management of GCD and appreciates Reclamation’s willingness to improve conditions for the trust resources in the Grand Canyon. The Service believes that the stated purpose and need is imperative to the continued adherence to the Endangered Species Act (ESA). The fish community in the Grand Canyon has been in a transitory state during the current 20-year drought with many warm-water nonnatives becoming more abundant (Boyer & Rogowski 2022). With decreasing Lake Powell elevations, warm water is released through GCD downstream and nonnative fish are entrained, resulting in further additions and the threat of establishment for some species (U.S. Geological Survey 2023). Monitoring efforts presented by the Arizona Game and Fish Department (AGFD) in 2023 indicate that the fishery below Glen Canyon Dam has begun a transition away from a cold-water fishery and toward an assemblage of warm water non-native invasive fish. The chief concern among fisheries biologists is the establishment of smallmouth bass (*Micropterus dolomieu*); however, a number of other warmwater non-native fishes have been increasing during this transitory stage (Smallmouth Bass Ad Hoc Group 2023).

As stated by Reclamation in the purpose and need of this SEIS effort, it is crucial to prevent the establishment of smallmouth bass (and other invasive warm water predatory fish) below GCD. Smallmouth bass have been identified as one of the most significant threats to the native fish community in Grand Canyon due to their piscivorous nature and their tolerance of environmental conditions. Humpback chub (*Gila cypha*) populations have increased dramatically in the Grand Canyon stretch of the Colorado River over the past decade; from a core population of approximately 9,000 fish in the Little Colorado River to estimates of as many as 65,000 fish currently between the tributaries and mainstem river (Van Haverbeke et al. 2022, 2023). These populations constitute approximately 90% of the known humpback chub (Figure 1). The Service recently downlisted the humpback chub from “endangered” to “threatened” (86 FR 57588; November 17, 2021) due to the population of humpback chub below GCD being mostly free of impacts from predatory nonnatives; the commitment to removal efforts of invasive fish in the Upper Basin; and flow alterations at the Upper Basin dams. The Service believes that the establishment of warmwater invasive fish, including smallmouth bass, below GCD represents the greatest current potential threat to the continued survival and recovery of humpback chub in the Lower Colorado River basin. The Service supports Reclamation’s efforts to analyze the potential of using additional flow options at GCD as a tool in response to increased detections of warmwater invasive fish below the dam.

Disruptive Flows and Preventing Spawning

The Service agrees with Reclamation’s stated purpose and need of the SEIS to prevent establishment of smallmouth bass below GCD by preventing additional spawning. In the NOI, Reclamation anticipates analyzing several alternatives within this SEIS; No Action, the four Action Alternatives considered in the February 2023 Draft EA (Reclamation 2023a), and a new Hydropower Alternative that does not include the use of bypass flows to reduce water

temperatures. The scientific literature, in addition to recent flow and temperature modeling, indicate that cooling water temperatures to below 16°C is the only effective method to prevent spawning, recruitment, and establishment of smallmouth bass in Glen Canyon. Furthermore, this is the best method for preventing their spread into western Grand Canyon (C. Yackulic, personal communication, November 30, 2022; (Bestgen & Hill 2016; Bestgen 2022; Yackulic & Eppheimer 2022; Young et al. 2022). The Service encourages Reclamation to work closely with Glen Canyon Monitoring and Research Center (GCMRC) to consider and include the best available science in determining whether proposed alternatives will meet the stated purpose and need of the SEIS. For an option to meet the stated need of preventing spawning of smallmouth bass, that option needs to demonstrate that waters will be cooled to below 16°C. The Service does not believe that penstock releases alone (the new Hydropower Alternative), would meet the purpose and need of this program in the short term as water temperatures at the penstock intakes are too warm to meet outflow temperature objectives needed to prevent spawning. This option may work in future conditions if water temperatures at penstock intakes are cold enough that releases following hydropower production would be cold enough to prevent spawning and/or a temperature control device was utilized to lower water release temperatures.

The previous Draft EA limited the evaluation of the proposed spawning disruptive flows to prevent spawning to just three years. The Service recommends that Reclamation not place a time limit for using disruptive flows in this SEIS but rather consider utilizing cold water spawning disruptive flows throughout the lifetime of the LTEMP whenever needed to lower river temperatures to below 16°C if there is a threat of warmwater invasive fish spawning. The previous Draft EA also included a discussion on cost impacts as related to loss of hydropower production. Should the draft SEIS also include a cost analysis of options, the Service requests that analysis also include costs associated with moving up the invasion curve and the relationship between the area occupied by an invasive species, time since introduction, and the cost of prevention, eradication, containment, and long-term management (U. S. Department of Interior 2021). The costs to control smallmouth bass if additional spawning is not prevented, are likely to grow exponentially.

Sediment Flows

The Service participated in the discussions regarding sediment flows and fully supports pursuing options that would bring more sediment into this system. That stated, it should be noted that only under the instances where the two resource efforts (fish and sediment flows) can be combined with full success for both resources should they be combined as a singular action. The Service does not believe that sediment flows should be dependent on smallmouth bass, nor vice versa. The Service expects that any experimental flows will be discussed with the larger partnership and that Reclamation will determine how and when to implement a flow based on the best interests of these two resources.

Success Monitoring

The Service believes that a dedicated project evaluating the conditions prior to and after the use of these flow options will assist in understanding the effectiveness of any action taken. Spawning and nesting for smallmouth bass generally occurs within the littoral zone of lakes and nearshore

in flowing waters, making it relatively easy to conduct observations of nests from a distance with binoculars (Winemiller & Taylor 1982). Spawning (generally followed 4 to 5 days later by nesting) takes place from April to mid-July at southern latitudes when water temperatures exceed 15°C (Tringali et al. 2015). Male smallmouth bass establish territories and excavate saucer-shaped depressions in coarse substrates (Pflieger 1966). Nests are often located near rocky or wood cover and males provide parental care during egg incubation, larval development, and the juvenile dispersal stage (Tringali et al. 2015). The Service believes that Reclamation, in partnership with GCMRC and the agencies responsible for the fishery in the Glen Canyon Reach of the Colorado River, should develop a study plan to investigate the effects of these disturbances on smallmouth bass prior to, during, and after any flow is implemented.

Other Actions

The Service believes that spiking flows to lower the temperature of releases at GCD below 16°C is the most important and time critical step needed to prevent establishment of smallmouth bass and other nonnative warm water fish. It is imperative to address species while they are early in the invasion process to prevent full establishment and spread (U. S. Department of Interior 2021). This step is just one of many steps needed for long term management and monitoring of invasive fish species as all partners continue to navigate climate change, warming waters and aridification of the southwest. Successfully preventing the introduction, establishment and spread of warm water invasive fish will take a multi-pronged effort (Smallmouth Bass Ad Hoc Group 2023). It is vital that entrainment of these fish through Glen Canyon Dam is addressed; that fish that do pass through the dam are removed; that conditions below the dam are not conducive to successful spawning in sloughs and in the mainstem river; that conditions that prevent the movement of warm water invasive fish upstream from Lake Mead are maintained; and that monitoring for warmwater invasive fish downstream of the dam is continued.

Closing

In December, 2022, Reclamation determined that the proposed flows to prevent establishment of SMB being proposed in the EA would not have any additional impacts to HBC or Razorback Sucker (Reclamation 2022). The Service responded in February, 2023, that Reclamation's plans were in accordance with the LTEMP BO (U.S. Fish and Wildlife Service 2023a). The LTEMP program currently operates under a 2016 BO (U.S. Fish and Wildlife Service 2016). Reinitiation of consultation is required under the BO in instances where "discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and: (1) If the amount or extent of incidental take is exceeded; (2) If new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) If the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) If a new species is listed or critical habitat designated that may be affected by the action." 50 CFR Section 402.16(a). After selecting the preferred alternative, Reclamation should consider the environmental consequences of this alternative, and explore with the Service if the action meets any of the regulatory reinitiation triggers.

Kathleen Callister, LTEMP SEIS Project Manager

Thank you for your continued coordination and commitment to conservation of threatened and endangered species. Should you require further assistance or if you have any questions, please contact Colorado River Special Assistant, Deborah Williams, deborah_williams@fws.gov, or Colorado River Coordinator, Dan Leavitt, daniel_leavitt@fws.gov.

Sincerely,

HEATHER
WHITLAW

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Heather Whitlaw
Project Leader

cc: Project Leader, Arizona Fish and Wildlife Conservation Office (jess_newton@fws.gov)
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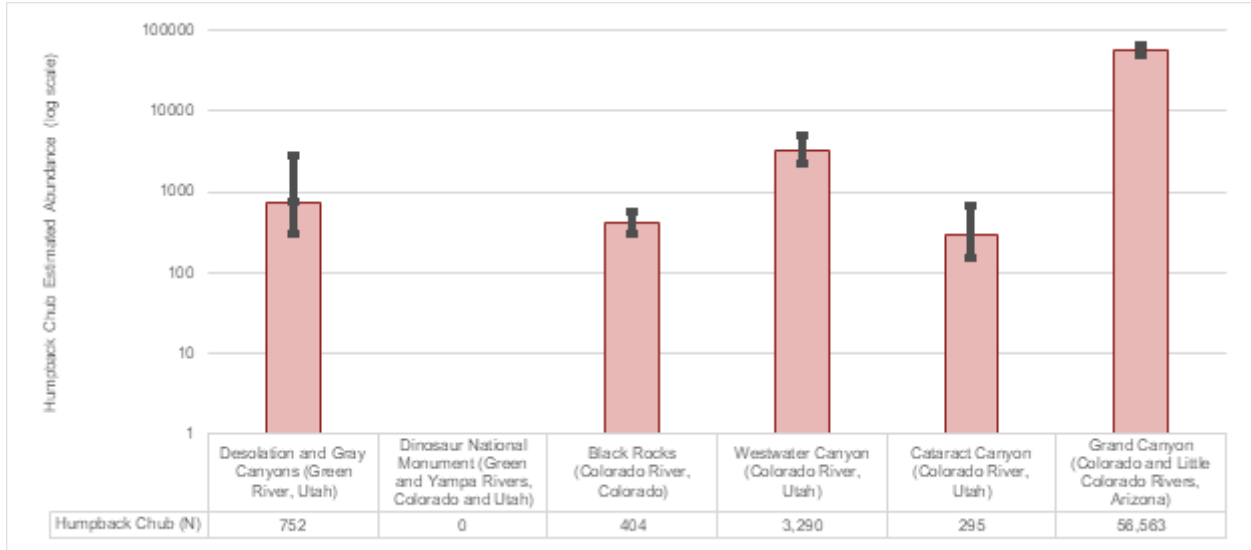


Figure 1. Current adult population abundance estimates (N) with upper and lower confidence intervals for Humpback Chub (*Gila cypha*) at six locations throughout its range. Estimates taken from most current and available reports (Badame 2008; Francis et al. 2016; U.S. Fish and Wildlife Service 2018; Hines et al. 2020; Caldwell 2021; Van Haverbeke et al. 2022, 2023) data can be made available upon request.