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U.S. Fish and Wildlife Service
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May 3, 1994

In Reply Refer To:
AESO/ES
2-21-94-F-262

MEMORANDUM

TO: Superintendent, Lake Mead National Recreation Area, National Park
Service, Boulder City, Nevada

FROM: State Supervisor

SUBJECT: Biological opinion, Native Fish Management Activities on Lake Mohave,
Arizona and Nevada

This responds to your request of March 11, 1994, for formal section 7 consultation with the Fish and Wildlife Service (Service) pursuant to the Endangered Species Act (Act) of 1973, as amended, on construction activities undertaken to implement the native fish rearing project on Lake Mohave. The listed species potentially affected by this action are the endangered razorback sucker (Xyrauchen texanus) and bonytail (Gila elegans). Lake Mohave was designated as critical habitat for both these fish in the final rule published on March 21, 1994. The rule took effect on April 20, 1994.

The 90-day consultation period began on March 16, 1994, the date your request was received by the Arizona Ecological Service State Office. No letter acknowledging receipt of this request was sent by the Service.

This biological opinion was prepared using information contained in the draft environmental assessment, the revised assessment sent by the National Park Service (NPS) to the Service on April 19, 1994, information provided by the Bureau of Reclamation (Reclamation), data in our files or in the published or grey literature, and other sources of information.

BIOLOGICAL OPINION

It is the Service's biological opinion that construction of the berm at Davis Cove and the improvements to four backwaters used in the native fish rearing project are not likely to jeopardize the continued existence of the endangered razorback sucker or bonytail. Designated critical habitat for the razorback sucker and bonytail in Lake Mohave is not likely to be destroyed or adversely modified as a result of the action.

BACKGROUND INFORMATION

Consultation History

The Service received a copy of the draft environmental assessment for the subject project on March 4, 1994. The request for consultation was dated March 11, 1994, and was received on March 16, 1994. The Service provided comments on the draft to the NPS under the National Environmental Policy Act on March 31, 1994. Included in those comments was a request for clarification on the scope of the project under consultation. The NPS responded to that request with a revised environmental assessment on April 19, 1994.

Description of the Action

The proposed action is to construct an earthen berm across the mouth of Davis Cove and reinforce the existing berms at North Arizona Juvenile, Arizona Juvenile, North Nine Mile and Willow backwaters on Lake Mohave. The cove and four backwaters are part of the multi-agency effort to raise razorback suckers to augment the existing population in Lake Mohave. This project targets the razorback sucker, although some efforts for bonytails have been included in the past. The rearing program itself is not the subject of this consultation, but is mentioned in this biological opinion because the project under consultation is being proposed to support the rearing program.

The four backwaters are among several used to initially raise larval and juvenile razorback suckers to a minimum 30 centimeter total length. Larvae are fed in laboratory or hatchery before being placed in the backwaters. During the fall, the fish are removed from the backwaters and those less than 30 centimeters taken to Davis Cove to complete their growth. Those 30 centimeters and over are released into the reservoir.

The berms separating the four backwaters from the reservoir would be enlarged using material either mechanically removed from the backwater (North Nine Mile and Willow) or obtained from shoreline areas adjacent to the backwater (Arizona Juvenile and North Arizona Juvenile). North Nine Mile and Willow backwaters would be deeper as a result of the berm improvements. Work there is proposed for October 1994 during the low water elevation period. Improvements at Arizona Juvenile and North Arizona Juvenile would be done with hand crews using material from adjacent areas. Work in these two backwaters is proposed for early summer, 1994.

Currently, a net controls the access to Davis Cove. Problems with maintaining the integrity of this barrier have occurred, reducing the usefulness of the cove to the program. The proposed berm would be created from 1,500 cubic yards of materials taken from areas within 500 feet of the cove. Construction would occur in the fall of 1994.

The Davis Cove portion of the proposed project would require renovation prior to the introduction of razorback suckers. Since the barrier net was not completely effective in keeping out non-native fish, individuals of these species have invaded the cove. Success of the rearing program depends on keeping a predator free environment. There would be an intensive salvage effort in Davis Cove to locate any razorback suckers or bonytails still present. Piscicide would then be used to eliminate all other fish. Rotenone has been selected

as the toxicant of choice due to its delayed toxicity and the habit of affected fish to surface. Any razorback suckers or bonytail observed at that time could be safely recovered.

Description of the Project Area

The lower Colorado River is defined as the reach from Glen Canyon Dam above the Grand Canyon to the delta at the head of the Sea of Cortez (Gulf of California). There are three large reservoirs along the lower Colorado River: Lake Mead, Lake Mohave and Lake Havasu. All perform a variety of roles including water storage, flood control, hydropower generation and recreational uses.

Lake Mohave is formed by Davis Dam and located downstream of Hoover Dam. Inflow to the reservoir is almost entirely from releases at Hoover Dam and inflow varies with hydropower and downstream water demands. The Colorado River through the area that became Lake Mohave was still largely confined by canyons and narrow valleys, thus the reservoir is long and mostly narrow with the only significant basins in the lower portion nearer the dam. Water level fluctuations over the year are predictable based on past operation of Hoover and Davis dams. Considerable information on the physical, limnological and biological conditions in Lake Mohave has been developed by Reclamation and this information is incorporated by reference.

Davis Cove is located on the Arizona side of the reservoir between the recreational development area at Katherine's Landing and Davis Dam. It has approximately three surface acres and is deep enough to provide sufficient fish habitat, even at low lake elevations. The opening between the cove and the reservoir is narrow, facilitating placement of a berm.

North Nine Mile and Willow coves are on the Nevada side of the reservoir with North Arizona Juvenile and Arizona Juvenile located almost opposite on the Arizona side. The coves are located along the shore of the largest basin in the reservoir and are up lake from Davis Cove. These are ephemeral backwaters and are smaller than Davis Cove. Water quality is good throughout the period of use.

Species Descriptions

Razorback sucker

The razorback sucker is an endemic fish species of the Colorado River Basin. Historically, large populations were found in the mainstem lower Colorado River and its major tributaries in the Gila River subbasin (Bestgen 1990). The razorback sucker populations were segregated by the construction of Hoover Dam and later Parker Dam on the Colorado River. Populations of razorback sucker were found in Lakes Mead and Havasu after impoundment and the large population in Lake Mohave was the larger subset of the Havasu population. The size of the population in Lake Mohave was estimated at 66,000 individuals in the mid 1980's and has declined to an estimated 24,000 in 1992. While adult razorback suckers are able to exploit the resources available in reservoirs, successful recruitment to these populations has been limited, largely due to the presence of non-native fish species in the reservoir. The observed declines in the Mead and Havasu populations is now showing up in the Mohave population as the fish reach senescence and are lost. Minckley et al. (1991) has

reviewed and summarized the biological information on the razorback sucker and that information is incorporated herein by reference.

Bonytail

The bonytail is also an endemic fish species of the Colorado River Basin that was once much more widespread than at present. Defining the historic distribution of the bonytail is complicated by records for the related roundtail chub (*Gila robusta*). Population declines were noted in the first half of this century and this species is extremely rare today. In the lower Colorado River, bonytails may only reliably be found in Lake Mohave. A few individuals are found in Lake Havasu. As with the razorback sucker, the adults are able to exploit the resources available in reservoirs while successful recruitment is limited by non-native fish. There is little biological information available on the bonytail. The biological support document for the critical habitat designation (USFWS 1993) contains a summary of this information that is herein incorporated by reference.

Environmental Baseline

The environmental baseline serves to define the current status of the listed species and its habitat to provide a platform to assess the effects of the action now under consultation. While it is clearly focused on conditions in the action area, it is important to include in the environmental baseline the status of the listed species throughout its range as well as in the action area. Any evaluation of the effects of the action must be made in the context of the overall status of each affected species.

The environmental baseline was developed using past and present impacts of all Federal, State, or private actions and other human activities in the action area; the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process. A summary of status information for the species from outside the action area also forms part of the environmental baseline.

Past Actions

The construction of large dams and associated reservoirs in the general project area had considerable effect on the habitats available for the razorback sucker and bonytail. Segregation and isolation of populations, changes in yearly flow patterns, water quality and direct depletions of water all contributed to the alteration of historic habitats and the creation of new types of habitats. The introduction of non-native fish and invertebrates have had significant adverse effects to the native fish populations, especially through reductions in recruitment.

Throughout the historic range of both species the same types of actions have contributed to the large reductions in their ranges. Entire river sub-basins no longer support natural populations of either species and even where they are still found, populations are not large and are likely still declining.

Species Status

The bonytail is critically endangered and may soon disappear from the wild. Few individuals have been found in the last decade outside of Lake Mohave and recruitment is low to non-existent in remaining populations. Efforts to introduce additional fish to the existing populations have occurred in the lower Colorado River in both Lake Mohave and Lake Havasu, but these programs are still in their infancy.

The razorback sucker could only be considered less endangered than the bonytail if estimated population numbers are used as the index of comparison. However, research and monitoring has clearly shown the major declines in the Lake Mohave population since the late 1980's. This downward movement will continue until the remainder of the old adult fish in the population are lost. The other populations in the lower Colorado River and its tributaries are small and not self-sustaining. Populations in the upper Colorado River and its tributaries are also small and continue to decline. Recruitment is low to nonexistent throughout the remaining range of the species.

EFFECTS OF THE ACTION

Direct and Indirect Effects

The intent of the proposed backwater improvements and Davis Cove berm construction is to provide habitats with a reduced predator component where primarily razorback sucker juveniles can grow to a safely releasable size. The rearing of bonytails as part of the project is of secondary emphasis at this time.

Effects to razorback suckers or bonytail chub from the backwater improvements would be limited. The mechanical deepening of two backwaters would be done while they are dry or almost dry and when no fish would be present. There would be some disturbance to adjacent substrates from vehicle passage. The plan calls for raking the disturbed areas to restore the original contour so there would be no significant changes to the shoreline. At the other two backwaters, removal of material from adjacent areas would change the contour of the shoreline. The actual area of disturbance resulting from the work would depend on the depth of material removed. This disturbance would be short term and not limit the availability of similar habitats in the reservoir. Eventually, deposition of material would reestablish stable contour in the affected area. If there are fish in Arizona Juvenile and North Arizona Juvenile during the construction period, we assume activities would avoid the watered area, reducing or eliminating any effects from these activities.

The increased height of the berm would not by itself have any particular adverse effect, but there may be an increase in sediment inflow to the backwaters from the unconsolidated material. Increases in sediment may also come from any borrow areas. Where material was removed from the backwater itself, there may be effects from the disturbed substrates during at least the first year. These changes would not be expected to be significant.

The situation at Davis Cove, regarding disturbance of substrates and increased sediment transfer from unconsolidated materials, would be similar to that described for the backwaters.

These changes would be in the short term and likely not be significant. The elimination of access by the berm would not significantly affect the availability of similar habitats in the reservoir.

There would be a direct risk to both razorback sucker and bonytail from the use of piscicide to renovate the cove after the berm is completed. This risk would be minimized by attempting to catch these individuals prior to the renovation and the stationing of boats and personnel to watch for surfacing fish during the renovation. Any razorback suckers or bonytails observed would be removed from the cove, placed in clean water, and released as appropriate.

Effects to Survival and Recovery

Implementation of the proposed improvements would contribute to the survival and recovery of these endangered fish. Development of rearing programs such as this effort in Lake Mohave is essential to the maintenance of these important populations. The potential loss of some individuals from the renovation effort must be balanced against the opportunities to produce many more individuals as part of the rearing program that will use the improved facilities.

Cumulative Effects

Cumulative effects are those effects of future State or private activities that have no Federal connection, that are reasonably certain to occur within the action area of the Federal action subject to consultation.

The proposed action would be implemented on federal lands. Lake Mohave is part of the Lake Mead National Recreation Area which is managed by the NPS. The water management in the reservoir is the responsibility of Reclamation. Opportunities for State and private actions are limited. Management of the recreational fishery is the responsibility of the states of Arizona and Nevada and is expected to continue.

INCIDENTAL TAKE

Section 9 of the Act, as amended, prohibits the taking (harass, harm, pursue, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species without a special exemption. The concept of harm includes habitat modification and degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding or sheltering. Case law has affirmed that taking does harm to listed threatened species when there is definable injury or death to individuals. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of the agency action, is not considered taking within the bounds of the Act, provided such taking is in compliance with the incidental take statement provided in the biological opinion.

There is some risk of incidental take of razorback suckers and bonytails in the renovation of Davis Cove. The extent of this incidental take is not definable. The plan already includes procedures that would reduce the risk of incidental take by first attempting to capture fish still in the cove and then removing fish that surface during the treatment. These procedures will limit the amount of incidental take that occurs. No additional reasonable and prudent measures to further reduce incidental take have been identified.

Reporting Requirements

At the completion of the project, the NPS will provide the Service with a report documenting any incidental take that may have occurred.

CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7(a)(1) of the Act direct Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for the species.

The Service recognizes that the proposed action is being taken in concert with essential recovery actions for the razorback sucker and, to a lesser extent, the bonytail. Plans to expand the ongoing rearing program should be handled by the multi-agency group that developed the plan. The Service has no conservation recommendations relevant to the particular action under consultation.

CONCLUSION

This concludes formal section 7 consultation on the improvement to four backwaters and placement of a berm at Davis Cove in Lake Mohave as described in your March 11, 1994, request. As required by CFR 402.16, reinitiation of formal consultation is required if: 1) the amount or extent of incidental take is exceeded, 2) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion, 3) the agency action is subsequently modified in a manner that causes an effect to a listed species or critical habitat that was not considered in this opinion, or 4) a new species is listed or critical habitat designated that may be affected by the agency action.

The Service wishes to thank the NPS for providing the environmental documentation for this important project. Multi-agency efforts such as the Lake Mohave razorback sucker rearing project are excellent examples of the types of cooperation and conservation the ESA intended to foster. The Service appreciates the efforts of all the agencies and entities that have contributed to this project. If we may be of assistance, please contact Lesley Fitzpatrick or Tom Gatz.

/s/ Sam F. Spiller

cc: Chief, Fish and Wildlife Service, Arlington, VA (DES)
Regional Director, Fish and Wildlife Service, Albuquerque, NM (AES)
Director, Arizona Game and Fish Department, Phoenix, AZ

LITERATURE CITED

- Bestgen, K.R. 1990. Status review of the razorback sucker, Xyrauchen texanus. Larval Fish Laboratory Report #44. Colorado State University, Ft. Collins.
- Minckley, W.L., P.C. Marsh, J.E. Brooks, J.E. Johnson, and B.L. Jensen. 1991. Management toward recovery of the razorback sucker (Xyrauchen texanus). Pages 303-357 in W.L. Minckley and J.E. Deacon, editors. Battle Against Extinction. University of Arizona Press, Tucson.
- U.S. Fish and Wildlife Service. 1993. Colorado River Endangered Fishes Critical Habitat. Draft biological support document. Salt Lake City, Utah. 225 pp.