

**CONCLUSION**

Listed species/critical habitat:

**Bonytail Chub and Razorback Sucker with Critical Habitat**

After reviewing the current status of the bonytail chub and razorback sucker in the action area and throughout the remaining range of these species, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that Reclamation's proposed action for operation and maintenance of facilities on the LCR is likely to jeopardize the continued existence of the bonytail chub and razorback sucker, and is likely to destroy or adversely modify designated critical habitat for both species.

**Basis for the Analyses**

The Service must utilize all information about the status of a species throughout its range when making the determination of jeopardy or destruction/adverse modification of critical habitat. This holds regardless of who or what is responsible for the actions that have adversely affected the status of the species. The analysis must consider conservation and recovery actions as well as those actions found to have adverse effects. The sum of the positive and negative factors is the status of the species. The analysis must also look at both the survival and recovery of the species as affected by the proposed action and all other relevant factors.

Regulations implementing section 7 of the ESA define "jeopardize the continued existence of" as:

"...to engage in an action that would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers or distribution of that species."

Under this standard, survival of an endangered species is jeopardized when an action, along with relevant factors above, appreciably reduces or compromises a species' ability to reach threatened status. Recovery is jeopardized when an action impairs or precludes an essential conservation effort, such as those identified in an approved recovery plan for the species.

Regulations implementing section 7 of the ESA define "destruction or adverse modification" as:

"...a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical."

Under this standard, survival of a species is compromised when the critical habitat unit cannot achieve its assigned conservation goal due to an appreciably diminished capability of the constituent elements. Survival in this case is a long-term consideration. Recovery is compromised when the action appreciably diminishes or precludes beneficial management of a

constituent element.

**Bonytail Chub**

Effects to the bonytail chub from water-based activities in the entire Colorado River Basin have already exceeded the jeopardy threshold. The species has been eliminated from at least 85% of its historic range and populations in the remaining 15% are very small (USFWS 1993a). Recruitment is virtually non-existent in the remaining wild populations. Actions called for in the recovery plan (USFWS 1990) are focused on preventing extinction in the wild as the primary, or most immediate, goal.

The LCR in the action area was once an important habitat for the bonytail chub and the species was at least common. Actions that are part of the environmental baseline have been directly and indirectly responsible for the collapse of the bonytail chub population, from being common in the river to only a few wild-born individuals surviving in two reservoirs. This collapse can be attributed to the combined factors of habitat alteration and introduction of non-native fish species that have precluded successful recruitment by the wild population. The continuation of these adverse physical and biological conditions impairs and precludes conservation efforts that would lead to the recovery of the species.

The small size of the extant bonytail chub population in the action area limits the extent to which the activities undertaken by Reclamation can have effects. Commitments by other agencies and Reclamation discussed in the proposed action will put 25,000 young fish into Lake Havasu and Mohave. This will not create adult populations of those levels due to mortality of individuals from various causes. What are likely small losses of individuals into canals or aqueducts or through powerplants may increase as population augmentation continues. This source of mortality is additive to natural losses that will reduce the population over time. Nonetheless, the increase in population size resulting from the proposed action does reduce the imminent threat of extinction in the wild and provides a respite in which to address issues affecting survival. The augmentation itself may, in the future, create an additional concern since the young fish will mostly be within ten years of age of each other and thus reach senescence at about the same time.

Without providing for recruitment to existing or re-established populations, recovery cannot occur. The maintenance of the bonytail chub in the wild by continual stocking provides for the survival of the species but not the recovery. Further, given that the number of wild-born adults available for the broodstock is very small, maintenance of what genetic variation remains for the species is critical. Very exacting procedures are needed in a hatchery setting to ensure that inbreeding and loss of genetic diversity do not occur. It is far simpler and success is more likely to occur in a free-breeding, recruiting, population. The proposed action does not change the existing situation for recruitment; thus, essential conservation efforts continue to be impaired or precluded.

**Razorback Sucker**

Effects to the razorback sucker from water-based activities in the entire Colorado River Basin have already exceeded the jeopardy threshold. Less than one-third of the historic range contains

natural populations (USFWS 1993a) and all but one of these are very small. Recruitment to all remaining populations, if it occurs at all, is not sufficient to maintain the populations. There is no final recovery plan, however, actions currently being implemented for the species focus on preventing extinction in the wild.

The LCR in the action area was once an important habitat for razorback suckers and the species was recorded as abundant. Actions that are part of the environmental baseline have been directly and indirectly responsible for the collapse of the razorback sucker population, from being abundant to less than 25,000 old adults in Lake Mohave and a few wild-born individuals in the reservoirs and riverine sections. This collapse can be attributed to the combined factors of habitat alteration and introduction of non-native fish species that have precluded successful recruitment by the wild population. The continuation of these adverse physical and biological conditions impairs and precludes conservation efforts that would lead to the recovery of the species.

Augmentation efforts have added young wild- or captive-born, cove-reared razorback suckers to the populations, but have not reached a replacement level. Commitments by other agencies and Reclamation discussed in the proposed action will put 25,000 young fish into Lake Havasu and 50,000 into Lake Mohave. This will not create adult populations at those levels due to mortality of individuals from various causes. What are likely small losses of individuals into canals or aqueducts or through powerplants may increase as population augmentation continues. This source of mortality is additive to natural losses that will reduce the population over time. Nonetheless, the increase in population size resulting from the proposed action does reduce the imminent threat of extinction in the wild and provides a respite in which to address issues affecting survival. The augmentation itself may, in the future, create an additional concern, since the young fish will mostly be within ten years of age of each other and thus reach senescence at about the same time.

Without providing for recruitment to existing or re-established populations, recovery cannot occur. The maintenance of the razorback sucker in the wild by continual stocking provides for the survival of the species but not the recovery. Using wild-born fish in the Lake Mohave efforts reduces the risk of genetic problems in the hatchery, but there is a chance of not capturing the range of characters in the population if the full breeding period and all spawning locations are not included in the effort. Having a free-breeding, recruiting, population reduces the risk further. There is some evidence to suggest that at least limited recruitment occurred recently in or above Lake Mead and below Parker Dam. We do not know the specific circumstances that allowed for this recruitment. Unusual events likely were involved. The proposed action does not change the existing situation for recruitment, thus essential conservation efforts continue to be impaired or precluded.

### **Critical Habitat**

Critical habitat for the bonytail chub in the action area consists of Lakes Havasu and Mohave. Critical habitat for the razorback sucker consists of Lakes Mead and Mohave, and the river between Parker and Imperial Dams. Designation of an area as critical habitat is not precluded if a constituent element has been compromised by past activities. The ESA acknowledges such cases likely would exist by identifying areas requiring special management or protection in order to

provide all constituent elements and contribute to survival and recovery. The Service, in designating critical habitat for the bonytail chub and razorback sucker, recognized that natural features of the river habitat had been significantly altered. However, the persistence of these species was determined to be important enough to override the deficiencies then existing.

The importance of Lake Mohave to the survival and recovery of the bonytail chub lies first with the presence of the extant population and second with providing lacustrine and cool water habitats. Lake Havasu has the added advantage of possessing areas of marsh, tributary inflow and riverine habitats largely lacking in Lake Mohave. The largest remaining population of razorback suckers is in Lake Mohave and the importance of that population is extremely high. The reservoir habitats can support a large population of adult fish. The Lake Mead population can access the Grand Canyon and habitats located in that portion of the river outside of the action area. The Parker-Imperial reach of critical habitat contains habitats that are closest to the historic conditions in the action area. The presence of these different habitats may assist in future studies on habitat needs and competition and predation related to non-native fish.

The Service recognizes that adult bonytail chub and razorback sucker can successfully live in the existing habitats. Both fish reproduce, but there is virtually no recruitment to the population. Under Reclamation's proposed operations and maintenance, few options to manage the river differently in order to correct deficiencies in the constituent elements are available. The ability to beneficially manage for constituent elements and contribute to recovery is diminished or precluded.

### **Southwestern Willow Flycatcher**

After reviewing the current status of the species, the environmental baseline for the action area, the effects of the proposed operations and maintenance program along the LCR from Lake Mead to the SIB and the cumulative effects, it is the Service's biological opinion that the operations and maintenance program along the LCR from Lake Mead to the SIB, as proposed, are likely to jeopardize the continued existence of the southwestern willow flycatcher. The proposed action continues the depressed distribution, numbers, and reproduction of the species in the action area, which is already beyond the jeopardy threshold, and significant levels of take are likely. No critical habitat has been proposed or designated for this species in the action area, therefore, none will be affected.

### **Yuma Clapper Rail**

After reviewing the current status of the Yuma clapper rail, the environmental baseline for the action area, the effects of the proposed operations and maintenance of the Colorado River, and the cumulative effects, it is the Service's biological opinion that the action as proposed is not likely to jeopardize the continued existence of the Yuma clapper rail. No critical habitat has been designated for this species, therefore, none will be affected.

Our conclusion is based on the following rationale: The numbers of this species are stable on the LCR and are increasing in some areas of California where new habitat has been created. Stable population levels for this species have persisted in the presence of long-term water project

operations and several researchers believe that this species has actually expanded its range northward as a direct result of dam construction which created new marsh habitat with relatively stable water levels (Conway 1990, Rosenberg et al. 1991, Thelander and Crabtree 1994), although Todd (1986) disagrees.

A stable population of rails, perhaps moving toward recovery, occurs in the presence of the ongoing operations and maintenance program on the LCR. Consultations on past individual projects of this program have not resulted in any jeopardy opinions. Only a relatively small amount of disturbance is likely in the form of occasional harassment of birds from recreation and from operations and maintenance activities and from the possibility of nest inundation due to water operations. No large construction projects are proposed during the five year period. Additionally, Reclamation proposes to avoid wetland areas during maintenance actions and to continue to maintain rail habitat.

Proposed species/proposed critical habitat:

**Flat-tailed Horned Lizard**

After reviewing the current status of the flat-tailed horned lizard, the environmental baseline for the action area, the effects of the proposed operations and maintenance program along the LCR from Lake Mead to the SIB and the cumulative effects, it is the Service's conference opinion that the operations and maintenance program along the LCR from Lake Mead to the SIB, as proposed, is not likely to jeopardize the continued existence of the flat-tailed horned lizard. No critical habitat has been proposed for this species, therefore, none will be affected. Our conclusion is based on the following rationale:

- 1) The proposed action would affect a relatively minor portion of the species' range.
- 2) A very small amount of take is likely.
- 3) During the five year period, no new disturbance will occur in the 5-mile zone.
- 4) Reclamation proposes to include approximately 16,000 acres of the 5-mile zone as part of the Yuma Desert Management Area for the flat-tailed horned lizard.

**REASONABLE AND PRUDENT ALTERNATIVE**

Regulations (50 CFR §402.02) implementing section 7 define reasonable and prudent alternatives (RPAs) as alternative actions, identified during formal consultation, that (1) can be implemented in a manner consistent with the intended purpose of the action, (2) can be implemented in a manner consistent with the scope of the action agency's legal authority and jurisdiction, (3) are economically and technologically feasible, and (4) would, the Service believes, avoid the likelihood of jeopardizing the continued existence of listed species or resulting in destruction or adverse modification of critical habitat.

Development of an RPA for the proposed action is a complex undertaking. The existing jeopardy