

March 10, 1987

Consultation No. 2-21-83-F-10

MEMORANDUM

TO: Regional Director, Lower Colorado Region, Bureau of Reclamation,  
Boulder City, Nevada

FROM: Acting Field Supervisor

SUBJECT: Biological Opinion, Central Arizona Project: Effect of Cliff Dam  
Element of Plan 6 on the Endangered Arizona Cliffrose (Cowania  
subintegra)

This biological opinion is in response to your request of January 16, 1987, for reinitiation of formal consultation under Section 7 of the Endangered Species Act of 1973 (as amended) for the construction and operation of the proposed Cliff Dam, a feature of Plan 6 of the Central Arizona Project's Regulatory Storage Division. This consultation was reinitiated on January 20, 1987, the date we received your request.

The Fish and Wildlife Service (FWS) and the Bureau of Reclamation (BR) have previously consulted on the effects of Plan 6 on the bald eagle (Haliaeetus leucocephalus), peregrine falcon (Falco peregrinus), Yuma clapper rail (Rallus longirostris yumanensis) and Gila topminnow (Poeciliopsis occidentalis occidentalis). The biological opinion was issued on March 8, 1983 and was amended or supplemented on April 7, 1983, November 15, 1984, and August 8, 1985. This opinion is a supplement to the March 8, 1983, opinion and shall not be construed to alter the content or intent of the original opinion or any other supplements or amendments thereto.

Surveys in 1985 by Dr. Barbara Phillips under a FWS contract documented the presence of the endangered Arizona cliffrose (Cowania subintegra), near the existing Horseshoe Dam within the proposed Cliff Dam 200-year flood pool and flood surcharge storage pool. The FWS informed the BR on June 2, 1986 of the presence of this species within the project area. The BR requested further information in a memorandum dated June 10, 1986. The BR contracted with a botanical consultant to survey their project area for the cliffrose and a field meeting was held between BR and FWS at the Horseshoe Dam site to discuss the progress of the surveys. Another meeting was held on August 19, 1986 to discuss the results of the surveys and other factors involving the consultation. The BR released the final botanical survey report on October 6, 1986.

This biological opinion is based on data in our files, information provided by the BR, and other pertinent information.

#### BACKGROUND INFORMATION

Plan 6 is a combination of elements to provide water storage, dam safety, and flood control for the Phoenix metropolitan area. Plan 6 is part of the Central Arizona Project (CAP) that will convey Colorado River water through a series of canals and aqueducts to cities, agricultural areas, and Indian reservations in central and southern Arizona.

Cliff Dam, an element of Plan 6, would be located on the Verde River below the existing Horseshoe Dam. Operation of Cliff Dam will require that the existing Horseshoe Dam be breached to allow full utilization of the Cliff Dam storage pool. More detailed information on the proposed project is available in the Environmental Impact Statement for Plan 6 and previous biological opinions on plan features.

The Arizona cliffrose is a small to medium sized shrub that was first recorded from Bureau of Land Management lands near Burro Creek in Mohave County. A second population was discovered in 1968 on the San Carlos Indian Reservation near Bylas in Graham County. A population was found near Dead Horse Ranch State Park near Cottonwood in the Verde Valley, Yavapai County in 1984. The Horseshoe Dam population was discovered in 1985 and confirmed in 1986. All four populations are on white, calcareous soils derived from Tertiary and Quarternary lacustrine deposits (Anderson 1986). The total population is estimated at between 11,000 and 50,000 plants, an unknown percentage of which may be hybrids.

Considerable controversy exists between botanists as to what constitutes a genetically pure Arizona cliffrose. The species has interbred with the common cliffrose (C. stansburiana), producing various degrees of hybridization. All four cliffrose populations contain some degree of hybridization with the Bylas population considered the most genetically pure. The two Verde Valley populations are considered by Dr. Clark Schaack (Northern Arizona University) to be largely of hybrid origin. Work is also underway on the genus Cowania that will address some of the questions regarding hybridization.

The BR surveys during the summer of 1986 recorded approximately 750 cliff-rose plants within the Horseshoe Dam area in four populations. Site A, nearest to the Dam contained approximately 200 plants; site B at Lime Creek contained approximately 25 plants; site C at the extreme upper end of the existing reservoir contained approximately 10 plants; and site D near Chalk Mountain contained approximately 500 plants. Of these approximately 750 plants, 250 would be affected by the proposed project. We are uncertain as to how many of these affected would be pure Arizona cliffrose.

### IMPACTS OF THE PROJECT

Operation of the Cliff Dam flood storage pools would result in the inundation of a portion of the Arizona cliffrose population at Horseshoe Dam. It is not certain how often or for what length of time plants in the 200-year or flood surcharge pools would be inundated, nor is it known how well the Arizona cliffrose tolerates inundation. New roads, a borrow area, and recreation sites are proposed for the area immediately west of Horseshoe Dam that contains approximately 200 plants (site A). Construction of roads and facilities at site A would have a more obvious and immediate adverse impact on the cliffrose.

It appears your action may destroy about 1 percent of the total known population and upwards to 33 percent of the Horseshoe Dam population.

### BIOLOGICAL OPINION

Based upon the preceding information, it is my biological opinion that the loss of up to 250 individuals of the Arizona cliffrose plants due to construction and operation of Cliff Dam is not likely to jeopardize the continued existence of this endangered species.

### CONSERVATION RECOMMENDATIONS

The FWS recommends that the BR consider implementing the following conservation measures to minimize project effects on the species and gain valuable information on the genetics and morphology of the Arizona cliffrose. This information would be especially important in differentiating hybrids from pure individuals:

1. Plans for the new roads, recreation area, and borrow area be modified to protect the plants at sites A and B. Consideration be given to fencing some or all of the sites to eliminate livestock grazing in the area.
2. Morphological studies be undertaken at all four Horseshoe Dam sites and comparisons made with the other three known populations to enable the differentiation of hybrids from pure stock. In conjunction with these studies, electrophoretic comparisons between populations be initiated to further define pure versus hybrid characteristics. Similar work has been done on other plants species and accepted techniques are available.

Further consultation is not required unless new information reveals effects of the action not considered in this biological opinion, or new species are listed that may be affected by this action, or the proposed action is subsequently modified in a manner not considered in this opinion.

If the FWS can be of further assistance, please contact Ms. Lesley Fitzpatrick or me (Telephone: 602/261-4720).

Gilbert D. Metz

cc: Director, Arizona Game & Fish Dept., Phoenix, AZ  
Director, FWS, Washington, D.C. (OES)  
Regional Director, FWS, Albuquerque, NM (FWE)

LITERATURE CITED

Anderson, J. L. 1986. Biogeographical analysis of *Cowania subintegra* Kearney (Rosaceae), an Arizona Sonoran Desert endemic. Arizona State University M.S. Thesis. Tempe, Arizona.