

SUMMARY  
BIOLOGICAL OPINION ON EMERGENCY WATERSHED PROGRAM PROJECT  
BEAVER DAM WASH, LITTLEFIELD, ARIZONA

**Date of the opinion:** September 13, 1994

**Action agency:** Soil Conservation Service

**Project:** Placement of two lines of Kellner jacks in Beaver Dam Wash to provide protection for the existing bank at the Beaver Dam Resort and Golf Course and allow for restoration/reclamation of lands lost to the January 1993 high water event.

**Listed species and critical habitat:** Woundfin (Plagopterus argentissimus), Virgin River chub (Gila robusta seminuda). Proposed threatened Virgin spinedace (Lepidomeda mollispinis mollispinis) and proposed endangered southwestern willow flycatcher (Empidonax traillii extimus) also may be affected by the proposed action.

**Biological opinion:** Non-jeopardy for all species.

**Incidental take statement:**

**Level of take anticipated:** Anticipated take is not quantifiable, but will be assumed to have been exceeded if (1) subsequent high water events result in erosion immediately up or downstream of the project that can be linked to the project's effects on the flow of water, and/or (2) if either line of Kellner jacks is displaced by subsequent high water events.

**Reasonable and prudent measures and terms and conditions:** SCS will be required to review the effects of this project on any future project it funds in the wash and that in future projects, preference will be given to solutions that do not restrict normal stream processes.

**Conservation recommendations:** Implementation of conservation recommendations is discretionary. The FWS recommends that the project be modified to only protect the existing bank and not attempt to reclaim the lands lost in 1993.

**Additional section 7 consultation needs:** This biological opinion should hold for the issuance of the section 404 permit that will be required for this project.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
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September 13, 1994

In Reply Refer To:  
AESO/TE  
2-21-94-F-388

Humberto Hernandez  
State Conservationist  
Soil Conservation Service  
3003 N. Central Avenue Suite 800  
Phoenix, Arizona 85012-2945

Dear Mr. Hernandez:

This responds to the request of May 25, 1994 from the Soil Conservation Service (SCS), to the Fish and Wildlife Service (Service) for formal section 7 consultation pursuant to the Endangered Species Act (Act) of 1973 (as amended), on an Emergency Watershed Program project along Beaver Dam Wash at the Beaver Dam Resort near Littlefield in Mohave County, Arizona. The listed species of concern in the project area are the endangered woundfin (Plagopterus argentissimus) and Virgin River chub (Gila robusta seminuda) and the proposed threatened Virgin spinedace (Lepidomeda mollispinis mollispinis) and proposed endangered southwestern willow flycatcher (Empidonax traillii extimus). There is no designated or proposed critical habitat within the proposed project area. The 90-day consultation period began on June 2, 1994, the date your request was received in the Service's Arizona Ecological Services Office.

This biological opinion was prepared using information contained in the biological evaluation, data in our files on the listed species and previous projects at the proposed site, data in the published or grey literature, and other sources of information.

#### BIOLOGICAL OPINION

It is my biological opinion that the implementation of the proposed action along Beaver Dam Wash is not likely to jeopardize the continued existence of the woundfin or Virgin River chub. There may be effects to the proposed threatened Virgin spinedace and the proposed endangered southwestern willow flycatcher, but these effects are not likely to jeopardize the continued existence of these species.

## BACKGROUND INFORMATION

### Consultation History

The Service, SCS and the U.S. Army Corps of Engineers (Corps) held several meetings and site visits to address this proposed action. There have also been discussions between the Service, the Corps and the Environmental Protection Agency (EPA) concerning unpermitted actions involving dredging and the placement of fill in Beaver Dam Wash as part of the construction and operation of the Beaver Dam Resort Golf Course. While much, if not all, of the illegally placed material has been removed by the landowner or by later high water events, the need for permits under section 404 of the Clean Water Act or other applicable Federal statutes has not been evaluated for the placement of the golf course in the floodplain of Beaver Dam Wash where their might be effects to jurisdictional wetlands from that project. Information on these previous activities was reviewed in the preparation of this biological opinion, but are not covered under this opinion.

### Description of the Action

The proposed action is designed to address impacts to private lands on the southwest bank of Beaver Dam Wash from natural high water events. Two lines of Kellner jacks, one out toward the center of the channel paralleling the location of a dike that failed in January 1993, and the other behind the first, nearer to but not at the new bankline, constitute the proposed action. The ends of the Kellner jack lines are tied into the bank or the remains of the dike. Construction of the jacks would take place on dry lands in the channel with no work in the live stream. No vegetation would be removed and the landowner has agreed to plant native cottonwoods and willows along the lines of jacks to restore riparian habitats lost previously. The biological evaluation did not contain information on the length of the jack lines, however in previous documentation the outer line was 450 feet long and the inner one was 800 feet long. Although not stated in the assessment, it appears this project extends beyond the protection of the existing bank by providing for restoration/reclamation of lands eroded by the high flows as sediment builds up around the outer line of Kellner jacks in the channel.

### Description of the Project Area

Beaver Dam Wash headwaters in Nevada, flows through Utah and confluences with the Virgin River in Arizona. The stream is perennial, however portions may be dewatered during low flows. High water events are common and contribute to the complexity of the stream morphology, aquatic habitats and riparian values. In the vicinity of the project, the wash is perennial and is fed by springs above the old State Route 91 bridge. There are several diversions from the wash, and one reservoir, Schroeder Reservoir, near the headwaters in Nevada.

Beaver Dam Wash below the proposed project area is included in the Virgin River Corridor Area of Critical Environmental Concern and Special Recreation Management Area managed by the Bureau of Land Management (BLM). The confluence of Beaver Dam Wash with the Virgin River is included in the river reach deemed eligible for wild and scenic river designation under the recreational classification. Water quality in the wash is of high quality and it may qualify as a unique water under Arizona water law.

Biotic resources in Beaver Dam Wash include riparian areas with mature cottonwood-willow gallery forests, wetlands and aquatic habitats. Scientific studies have documented the value of riparian habitats to wildlife in arid land regions. Although affected by upstream water diversions, flows and water quality in the wash do support a fish fauna containing both native and introduced species.

Special status species that may be found in the general area of the proposed project include the endangered woundfin, Virgin River chub, peregrine falcon (Falco peregrinus anatum), and proposed threatened Virgin spinedace. There is potentially habitat for the proposed endangered southwestern willow flycatcher in the riparian areas along the wash. Candidate species for listing under the Act, including the white-faced ibis (Plegadis chihi), spotted bat (Euderma maculata), and California leaf-nosed bat (Macrotus californicus) may utilize the area.

### Species Descriptions

#### Woundfin

The woundfin was listed as an endangered species in 1970 under a precursor to the Act. Biological and distributional information on the woundfin is summarized in the Woundfin Recovery Plan (USFWS 1985). For information beyond that provided in this biological opinion, please refer to the recovery plan or more recent published studies.

The woundfin is a small, silver minnow named for the sharp spine on the dorsal fin. A member of the tribe Plagopterini, the genus Plagopterus is monotypic. Historic distribution of the woundfin included the Colorado, Salt, Verde and Gila rivers in central and western Arizona in addition to the Virgin River and its tributaries. The woundfin is presently known only from the Virgin River drainage.

In the Virgin River, woundfin are found most often in the main channel, although some use of tributary streams has been noted. Runs and quiet waters with sand or sand/gravel substrates located adjacent to riffles are most used by adults. Fry may be found in shallow areas next to the channel while juvenile habitats resemble those of adult fish. Pools, which often contain predatory non-native fish species are generally avoided. Woundfin are omnivorous, consuming algae, detritus, other vegetative material, and aquatic insects.

Virgin River chub

The Virgin River chub is a silvery minnow that averages 20 centimeters (cm) in length but can reach up to 45 cm. The genus Gila contains several unique Colorado River fish. The Virgin River chub is most obviously differentiated from other Gila by the imbedded scales that give individuals a scaleless appearance. Historically, the Virgin River chub was known only from the Virgin River, although recent data supports including Gila robusta from the Muddy River as Virgin River chubs.

Virgin River chub inhabit deep runs and pool habitats with moderate to low velocities. Generally, larger chubs are found in deeper and faster water than smaller chubs (Hardy et al. 1989). Sand substrates with some form of instream cover were common components of the habitat for all sizes studied. Filamentous algae is a primary food for adults (Cross 1975), with younger fish concentrating on macroinvertebrates (Hardy et al. 1989).

#### Virgin spinedace

The Virgin spinedace is in the tribe Plagopterini and is one of the four Lepidomeda species endemic to the Colorado River basin. All spinedace species have restricted distribution within their native river systems. The Virgin spinedace is only found in the Virgin River drainage. It is a small minnow, silvery with a brassy sheen. The first two dorsal spiny rays are weakly fused and give the species its common name.

Virgin spinedace prefer clear, cool and relatively swift streams, although they are also found in pools with undercut banks or some other cover (Rinne 1971). They are also often found in the shear zones between high and low velocity waters where cover in the form of undercut banks, vegetation, or boulders is present (Hardy et al. 1989). Virgin spinedace are primarily insectivorous at all ages (Rinne 1971).

#### Southwestern willow flycatcher

The southwestern willow flycatcher is a riparian dependent bird historically found along most of the rivers in Arizona into California and New Mexico. The loss of riparian vegetation along these rivers has had a significant adverse effect on this species.

#### Environmental Baseline

The environmental baseline serves to define the current status of the listed species and its habitat to provide a measure against which to assess the effects of the action now under consultation. While the baseline must focus on the conditions in the action area, to an extent the analysis must include information on the status of the species throughout its range. Any evaluation of the effects of the action under consultation must be made in the context of the overall status of each affected species.

The environmental baseline has two components. The first is a summary of the past and present impacts of all Federal, State and private activities in the area of the proposed action, the anticipated impacts of all proposed Federal activities in the action area that have already undergone formal or early section 7 consultation, and the impact of any State or private activities which are contemporaneous with this consultation process.

The second component is a summary of the status of the affected species throughout its range. The effects of any completed or ongoing recovery actions is included, as are conservation actions, reasonable and prudent measures and reasonable and prudent alternatives that have been initiated as a result of completed section 7 consultations.

### Past Actions

The Virgin River basin has been subject to the effects of Federal, State and private activities. Historic flows in the river and its tributaries have been altered by diversions of water for agriculture and municipal uses. The construction of water storage dams on some tributaries has altered flows and changed water quality downstream. Dams, large or small, also act a barriers to fish moving up and down stream and contribute to the fragmentation of fish populations. Land uses also have an impact on aquatic and riparian resources. Loss of riparian vegetation and changes to upland vegetation structure affect runoff rates and amounts that then affect the hydraulics of the watercourses including erosion and deposition of sediments, meander patterns and other physical features of the stream. Water quality has also been adversely affected by spills from mining operations and discharges from agricultural and municipal operations.

In addition to the physical changes to the river ecosystem, introductions of fish species not native to the Colorado River Basin were made for commercial and recreational purposes. There are only 36 species of fish native to the Colorado River Basin, 64% of which are not found outside the basin (Carlson and Muth 1989). Over 70 species of fish have been introduced to the basin, and while not all introductions have been successful, the majority were successful and non-native fish species dominate in nearly all the remaining aquatic habitats.

Most, if not all, of the significant physical and biological changes to the Virgin River were accomplished prior to passage of the Act. Section 7 consultation has been accomplished on Federal actions initiated since 1973.

### Species Status: Woundfin

Woundfin populations have declined in response to physical changes to the Virgin River and its tributaries and from the introduction of non-native fish species, particularly the red shiner (*Cyprinella lutrensis*). Despite the protections afforded by the Act, the woundfin populations in the Virgin River continued to decline during the 1980's. High water events of the early 1990's may have reduced the numbers of non-natives in the system but only

temporarily. Efforts in the 1980's to remove non-native fish from the system using toxicants were not entirely successful. Additional adverse impacts to the woundfin came from the failure of Quail Creek Dam in 1989.

Efforts to maintain a captive stock of woundfin to provide individuals for restoration of populations elsewhere in the range of the species have only recently begun to show some success. Because the woundfin is a short-lived species, yearly reproductive success may be necessary to ensure population persistence.

**Species Status: Virgin River chub**

Virgin River chub populations have been adversely affected by the physical changes to the Virgin River system and the presence of non-native fish species. Status of the species has not appreciably improved since it was listed as endangered in 1990. A captive population of Virgin River chub is being held for use in restoration and augmentation of existing populations.

**Species Status: Virgin spinedace**

The Virgin spinedace has declined in both distribution and abundance to the extent that it was proposed for listing as threatened in 1994. Although losses to habitat have been significant, with an estimated loss of 40% of historic habitat, the remaining habitats support sufficient populations of the species that it is not in immediate danger of extinction. However, if trends of habitat loss along the Virgin River system are not controlled, the status of the Virgin spinedace will continue to decline.

**Species Status: Southwestern willow flycatcher**

This riparian dependent species has declined to the point that only very small, isolated breeding populations exist. Much apparently suitable habitat is not occupied and declines are continuing. Even in areas where the riparian habitat needed by the flycatcher is protected, nest parasitism by brown-headed cowbirds (*Molothrus ater*) significantly reduces recruitment of young flycatchers to the population.

## EFFECTS OF THE ACTION

### Direct and Indirect Effects

Woundfin are not found in Beaver Dam Wash in the vicinity of the proposed action. They are known from the mainstem Virgin River both up and downstream of the confluence with Beaver Dam Wash. Virgin River chub has been reported from both the wash and the river. The Virgin spinedace have been reported from Beaver Dam Wash in the vicinity of the proposed action. There are records of southwest willow flycatcher breeding in riparian areas

along the Virgin River. Because the proposed action would take place near the confluence with the Virgin River, effects to species known from the river will be included in this discussion.

The proposed action includes restrictions on the use of construction equipment or other project work in the watered channel of the wash. The active channel is presently distant enough from the work sites that diversion of the stream is not necessary and all work would be accomplished on the dry floodplain. This situation could change if a high flow event occurs before the project is completed. Because work would not have to take place in the watered channel, risk to individual fish from the construction itself is reduced. Increases in sediment load resulting from construction activities would also be minimized if work did not take place in or immediately adjacent to the watered channel. There is the possibility that rainfall or increased flows could pick up and transport sediment from the disturbed area to the stream, but the amount of this increase is not known. Because the flow through Beaver Dam Wash is usually quite clear, increases in sediment due to the project may be more noticeable.

The assessment of effects for this project discusses the potential for a decrease in sediment as a result of the bank protection designed to reduce erosion during high flow events. There may be some reduction in sediment from the protected banks, but given the condition of other banks along the wash, this difference may not be discernable.

Although the assessment states that the proposed action would not result in a diminution of the floodplain, it also states that the outer line of jacks would sink into the substrate during high flows and would "...tend to build a more natural stream bank." This clearly indicates that there is an intent to narrow the channel width available for normal stream movements and reclaim portions of the floodplain for development. Placement of tree plantings along this outer line of jacks would also encourage deposition of materials to build up a new bank. This new bank would affect the erosion and deposition patterns up and downstream which would have an effect on fish and riparian habitats. Beaver Dam Wash is a dynamic system and efforts to reclaim lands in the channel in one location does not take into account the reasons the water moved in that direction during the high water event, the likelihood that the proposed solution would hold and the effects to adjacent lands. The change in runoff patterns caused by the placement of the golf course and other resort structures may also play a role in determining the effects of this project.

#### Effects to Survival and Recovery

The long or short-term survival of an endangered species may require implementation of recovery actions as well as protection for individuals and the habitat. In cases of special urgency, actions that contribute to adverse conditions reduce the effectiveness of recovery actions that are or could be taken. Congress was very clear in its defining the purposes of the Act. Section 2(b) states:

"The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved..."

The definition of "conserve" is found in section 3(3):

"...to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary..."

The Virgin River system has been significantly affected by human activities. It is fortunate that aquatic and riparian habitat values have been retained in many areas. However, continued efforts to channelize or otherwise restrict natural river behavior do little to encourage the continuation of these remaining habitats. Changes in channel location within the floodplain are not aberrant results of high flow events, but are part of the normal operation of the stream. Maintaining the ability of Beaver Dam Wash to behave in as normal a manner as possible benefits the aquatic and riparian values both in the wash and at the confluence. While there may or may not be significant use of the wash by either the woundfin or Virgin River chub, the confluence is an important area for Virgin spinedace and healthy riparian forests are needed for the southwestern willow flycatcher.

### 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.

Much of the length of Beaver Dam Wash is in State or private ownership and is thus subject to development actions in the future. There may be a Federal nexus in the form of section 404 permits for some of these activities, but as the development of the Beaver Dam Resort indicates, significant development can occur without this Federal oversight.

Additional development along the wash may be affected by high flow events, with the result that both SCS and Federal Emergency Management Authority (FEMA) authorities for flood damage repair may be activated. Since these are Federal agencies, section 7 consultation under the Act would apply to all their proposed actions. Any additional development contributes to the likelihood that more bank stabilization projects would be proposed for the wash. The precedent set by this project, the attempt to reclaim lands by reestablishing the bank of the channel at the pre-high water event location could be used by others in requesting Federal aid after future events.

## 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.

The design of the project is such that the direct take of individual woundfin or Virgin River chubs is not likely to occur. There is some opportunity for take to habitat that provides resources for breeding, feeding and sheltering due to the reclamation of the lands behind the outer line of Kellner jacks and the changes to flow patterns in the wash that may result. These effects are not quantifiable, and the degree of significance can only be assessed over time.

In a biological opinion, the Service is required to provide the action agency with a level of incidental take and a means to identify when that level has been exceeded. The Service believes that efforts to restore floodplain lands for development purposes further compromises the ability of the flood plain to function in its historic manner. This affects the riparian and aquatic conditions needed by endangered and threatened species, but the nature of these effects makes it very difficult to document. Because of these difficulties, a level of incidental take resulting from the proposed action will not be provided in this biological opinion. Providing a means to identify when this level has been exceeded requires an examination of indirect measures. The Service believes that incidental take for this project would be exceeded if one or more of the following occur:

1. If subsequent high water events result in erosion immediately up and/or downstream of the project area that can be linked to the project effects on the flow of water.
2. If either line of Kellner jacks is displaced by subsequent high water events.

### Reasonable and Prudent Measures

The following Reasonable and Prudent Measure (RPM) is required to reduce the level of incidental take resulting from the implementation of the proposed action.

1. Measures will be taken to review the results of subsequent high water events to determine if there were effects to channel or bank morphology from the placement of the Kellner jacks.

### Terms and Conditions

The following terms and conditions are required to implement the RPM described above. Implementation of all terms and conditions is required to be in compliance with section 9 of the Act.

To implement RPM 1:

1. SCS will incorporate into their review process for future projects along Beaver Dam Wash an examination of the effects of placing these Kellner jacks at the Beaver Dam Resort.
2. SCS will, in future projects on Beaver Dam Wash, give preference to solutions that do not restrict normal stream processes instead of those that would restrict those processes.

### 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.

We recommend the following actions:

1. Bank stabilization under the proposed action be limited to the existing bank and not attempt to reclaim lands by restoring previous banklines.

### SPECIES PROPOSED FOR LISTING

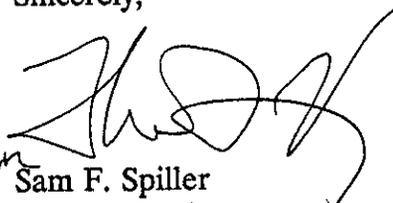
The magnitude of potential effects to the Virgin spinedace and southwestern willow flycatcher is not significant to result in a likelihood of jeopardy for either species. If either is listed prior to the completion of the proposed action, further consultation under section 7 of the Act may be needed.

CONCLUSION

This concludes formal section 7 consultation on the bank stabilization and reclamation project on Beaver Dam Wash as described in your request for consultation. 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.

In future communications on this project, please refer to consultation number 2-21-94-F-388. If there are any questions about this biological opinion, please contact Lesley Fitzpatrick or Tom Gatz.

Sincerely,

  
For  
Sam F. Spiller  
State Supervisor

cc: Director, Arizona Game and Fish Department, Phoenix, AZ  
Regional Director, Fish and Wildlife Service, Region 2, Albuquerque, NM (AES)

## LITERATURE CITED

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