

October 30, 2002

Joseph Alston
Superintendent
Grand Canyon National Park
P.O. Box 129
Grand Canyon, Arizona 86023

Dear Mr. Alston:

We appreciate the opportunity to comment on the scoping for the Colorado River Management Plan (CRMP) revision. The Environmental Impact Statement (EIS) will restart the process to update the park's 1989 CRMP. We understand that this process will not address issues considered outside of the scope of the EIS, including Glen Canyon Dam operations, commercial overflights, Wild and Scenic river designation, Wilderness designation, backcountry operations, and administrative use allocation. Therefore, we confine our comments to those the Park Service considers to be within the scope of the EIS, namely resource protection, potential resource impacts, user capacity, and possible mitigation measures to avoid or minimize impacts to natural and cultural resources.

The mission of the Grand Canyon Trust is to protect and restore the canyon country of the Colorado Plateau — its spectacular landscapes, flowing rivers, clean air, diversity of plants and animals, and areas of beauty and solitude. Protecting healthy river ecosystems is an integral part of the pursuit of our mission.

Introduction

The Colorado River is the main artery that flows through the Colorado Plateau. Its corridor forms the heart of the Grand Canyon, one of the most beloved natural destinations in the United States and the entire world. It is a World Heritage Site and an International Biosphere Reserve.

With such status, one would think that the Colorado River would be one of the healthiest river ecosystems in the world as it flows through Grand Canyon National Park. However, if ecosystem health were determined by the existence of healthy populations of native species, the sad reality is that the Colorado River would be judged to be a very unhealthy environment. In fact, the Colorado River is a sick patient. If it were wheeled into an emergency room it would be immediately placed on life support.

The Grand Canyon Trust's comments focus on why the situation is so dire and what the Park Service ought to consider to improve it. The Grand Canyon Trust's official position is that the use of motors on the Colorado River should eventually be terminated and that the entire river corridor and other qualifying areas of Grand Canyon National Park should eventually be designated as Wilderness. However, the Trust believes there is enormous risk that much of the

CRMP planning effort will degenerate into an argument exclusively over who gets to use the river and how they get to use it – in essence, “carving up the corpse.” Unless the urgent natural resource needs of the Colorado River are addressed, and addressed promptly, there will be little left to argue over. While much is made of such issues as allocation, the steady and precipitous decline of the health of the Colorado River as it flows through Grand Canyon is **the single crucial issue** that must be addressed now and cannot wait until another day. No one knows for certain if the decline in the Colorado River’s condition is reversible or not, but it is certainly time sensitive: the river is in worse condition now that it was only a few years ago. If the CRMP fails to first address the natural resources of the Colorado River in the Grand Canyon, then it is surely failing in its core mission to “conserve the scenery and natural historic objects and wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired” (National Park Service Organic Act).

The Grand Canyon Trust recommends that the CRMP revision include in its scope the following natural resource issues critical to the Colorado River within Grand Canyon National Park. While we understand that the operations of Glen Canyon Dam are outside of the sole discretion of the National Park Service, improvement of the Grand Canyon ecosystem cannot occur without consideration of Glen Canyon Dam operations and it is incumbent on the Park Service to exert its full authority in every forum available to it to achieve river health. Therefore, our recommendations numbered 1 and 2 below should be considered in that light. Our recommendations numbered 3 through 6 are well within the scope of this CRMP revision as defined by the Park Service.

- 1) The CRMP must consider more flexible flow regimes of the Colorado River as they relate to resources in the Grand Canyon;
- 2) The CRMP must consider temperature, sediment, and non-native fish control in the Colorado River;
- 3) The scope of the CRMP should include tributary streams;
- 4) The scope of the CRMP should include native fish species;
- 5) The scope of the CRMP should include riparian vegetation zones;
- 6) The scope of the CRMP should include control of non-native species, as well as visitor impacts and interactions with sensitive native species.

Grand Canyon National Park, the crown jewel of our national park system, is one of the most under-funded parks in a system that is chronically under-funded. Grand Canyon National Park Science Center, where all resource monitoring, research, and protection take place, receives a paltry 8% of the funding the park receives. According to the park, “Historic funding and staffing levels have been inadequate to establish an active park-based wildlife and fisheries management and monitoring system”(1997 RMP). We have provided a brief summary of the Park’s budgetary shortfalls for the Science Center in the Appendix of these comments. While this information is not new to the Park, it may assist others in understanding the significant lack of necessary resources currently faced by the Science Center, the primary steward of the wildlife and natural resources of Grand Canyon National Park.

In short, the time has come for Grand Canyon National Park to meet the natural resource protection mandates identified in the park's Organic Act, the Master Plan for the park, the Grand Canyon Protection Act, and the National Environmental Policy Act.

Resource Protection

The Park Service has several mandates that require the protection of unimpaired natural resources and the consideration of the long-term impacts of current decision-making.

The Organic Act (also known as the National Park Service Act) of 1916 states that the Park Service "...shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations, hereinafter specified, by such means and measures as conform to the fundamental purpose of said parks, monuments and reservations, which purpose is to conserve the scenery and natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired."

The Grand Canyon National Park Master Plan states "...preservation of the Grand Canyon natural environment is the fundamental requirement for its continued use and enjoyment as an unimpaired natural area. Park management therefore looks first to the preservation and management of the natural resources of the park. The management concept is the preservation of total environments, as contrasted with the protection of only a single feature or species."

The Grand Canyon Protection Act of 1992 requires the Secretary of the Interior to "protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use" [Section 1802(a)].

We believe that the direction given to Grand Canyon National Park clearly mandates that the natural values of the Colorado River as it runs through the Park must be managed in such a way as to leave them "unimpaired." This applies to the wildlife, fishes, vegetation, and beaches that could be negatively affected by the decision to allow existing levels, as well as increased levels of visitor use within the river corridor. The Master Plan emphasizes this by stating that the goal of management is the preservation of total environments, and the Grand Canyon Protection Act emphasizes the protection of natural and cultural resources. Therefore, the Park Service has clear direction to manage the ecosystem present within the river corridor so that it functions in a healthy manner and to improve the health of that system. This means, at a minimum, that the Park Service must conserve all native species in the Colorado River Ecosystem.

The National Environmental Policy Act (NEPA) expands upon these laws by expressly directing the government to use all practicable means to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations" [42 U.S.C. 4331(b)(1)]. While planning over a long period, such as 100 years, is probably impossible, considering such a long period in decision-making is essential. A case in point is Glen Canyon Dam. The decision made over 40 years ago to construct the Dam has produced resource impacts and constraints, resulting in hard choices today about maintaining and restoring native fish populations in the Grand Canyon. It is

profoundly necessary to anticipate long-term consequences of such decisions and to ask, what opportunities are created and foreclosed by those decisions? For example, the conservation of endangered species is far simpler if long-term effects on ecosystems and habitat are considered, rather than attempts to preserve and restore remnant populations on the brink of extinction (McElfish and Parker 1995). NEPA sets out six objectives in §101 including the sustainable management and responsible use of resources. NEPA's long-term approach is to avoid the creation of encumbrances that may be costly for those in the future to remove.

The language of NEPA mandates that the Park Service consider its decisions as they relate to future generations. Decisions cannot be made without considering the long-term implications on the natural resources for which the Park Service is a trustee. NEPA, in combination with the Organic Act and the Parks' Master Plan, explicitly mandates the full consideration of the natural environment, a functioning ecosystem that incorporates all components, the welfare of future generations, and a responsible use of resources.

The resources that we believe need consideration and protection by the Park Service during the CRMP process are outlined in the following section.

Recommendation 1: The CRMP must consider more flexible flow regimes of the Colorado River as they relate to resources in the Grand Canyon

Habitat changes created by the dam and the proliferation of non-native fish are the primary suspects in the loss of four native fish and the dramatic decline of the humpback chub in Grand Canyon. The chub evolved over eons in relatively warm, sediment-rich waters in a system prone to both flooding and drought. Water releases from Glen Canyon Dam are cold and clear, creating unfavorable habitat conditions for the humpback chub and favorable habitat conditions for the chub's non-native predators.

The Colorado River through Grand Canyon is also suffering from significant sediment decline. Glen Canyon Dam blocks nearly all the sediment that once moved down the Colorado River. Sediment is a key river resource, necessary not only to building sand bars and beaches, but contributing also to a healthy aquatic food base, terrestrial plant communities, and stabilizing cultural resources located just above pre-dam high water levels.

More flexible flows from Glen Canyon Dam are needed to restore native species and build up beaches. Needed flows include:

- Low steady flows in the summer and fall (as required in the 1994 Biological Opinion) in order to create habitat conditions conducive to native fish recruitment;
- Fluctuating flows in the spring in order to disadvantage non-native fish; and
- Beach habitat building flows at all times of the year in order to increase retention of fine sediment in the river system.

Recommendation 2: The CRMP must consider temperature, sediment, and non-native fish control in the Colorado River

In order to recover the humpback chub and other native fish, temperature control is necessary. The Colorado River must be warmed in order to improve recruitment of the humpback chub. At the same time, temperature changes can be used to disadvantage non-native fish. Warmer waters will hurt rainbow and brown trout; colder temperatures will hurt striped bass and red shiners.

Sediment augmentation must also be considered. In order to fully restore the Colorado River ecosystem, we will need to have sediment made available beyond the time periods when fortuitous storms load tributaries with sediment.

Non-native fish control will need to be done throughout the river system in order to knock down the predating and competing non-natives. Temperature and sediment are two good tools for this purpose. The Park should also consider mechanical removal and piscicides.

Recommendation 3: The scope of the CRMP should include tributary streams

The management scope for the Colorado River ecosystem in Grand Canyon includes not only the river corridor and various terraces, but also the tributaries, in some of which native fish exist and which are subject to visitation by river runners. We believe that the spatial scope of the revised CRMP should be the Colorado River and the entire area within 500 vertical feet of the river, including all tributaries within Grand Canyon National Park. The reasons for this spatial scope are: 1) the river plays a large role as a dispersal corridor for non-native plants and management of the river may have implications for non-native species distribution on the lower slopes of Grand Canyon (e.g., *Bromus* grasses) (Stevens and Ayers 2002); 2) the tributaries that are nearly or entirely enclosed in Grand Canyon National Park's boundaries are among the only remaining pristine stream systems left in western North America, making them the only natural settings in which we can clearly understand riparian and stream processes without the impacts of grazing, mining, logging, and other human activities; and 3) tributaries are strongly connected to the mainstream, providing spawning habitat for native fish, invertebrate drift and refugia, coarse organic debris, and nutrients, therefore, it is inappropriate to create unnecessary political subdivisions within Grand Canyon that may obscure these relationships and connectivities.

Recommendation 4: The scope of the CRMP should include native fish species

The Colorado River is one of the most altered and regulated rivers in the world. Because of this, it is difficult to separate the discussion of management of recreational use of the river corridor from the ecosystem alteration caused by the construction and management of Glen Canyon Dam. An indication of the extent of alteration of this ecosystem is exemplified in the state of native fishes in the Colorado River within Grand Canyon. Prior to construction of the dam, eight species of fish were present. Today, four of these species have been extirpated from the Grand Canyon section of the river – bonytail chub (*Gila elegans*), roundtail chub (*Gila robusta*), Colorado pikeminnow (*Ptychocheilus lucius*), and razorback sucker (*Xyrauchen texanus*).

The extirpation of these fishes from the Grand Canyon exemplifies the poor condition of the river ecosystem. These conditions are leading to what some say may be the eventual extirpation of the federally endangered humpback chub (*Gila cypha*). The humpback chub is one of 35 fish species native to the Colorado River Basin. The species is part of an ichthyofaunal assemblage with the highest level of species endemism (74% or 26 species) of any major basin in North America (Miller 1959). Long periods of geographic isolation for the Colorado River, together with high gradient, high sediment, and variable flow volumes and temperatures have combined to shape this unique assemblage (Valdez and Ryel 1995). It is surmised that the humpback chub speciated from a bonytail-like form in canyons of Northern Arizona about 3 million years ago (Miller 1946; Minckley *et al.* 1986).

As you are well aware, the current situation of the humpback chub in Grand Canyon is dire. They may be declining for complex reasons, including inundation of habitat behind the dam, coldwater releases below the dam, modified habitat from channel geomorphic changes, altered flow regimes, invasion by non-native fishes, alien parasites and diseases. The chronic low recruitment experienced by humpback chub in the Little Colorado River Basin is resulting in a decline in the overall abundance of the population. In 2001, humpback chub abundance was estimated to be about 2,000 adults. The majority of the humpback chub in Grand Canyon is associated with the lower 14.9 km of the Little Colorado River, and the adjacent 13.5 km of the main stem (6.9 km upstream and 6.6 km downstream of the LCR inflow) (Valdez and Ryel 1995). Consistent successful reproduction appears to occur only in the Little Colorado River, with insignificant reproduction in other major tributaries (e.g., Bright Angel Creek, Shinumo Creek, Kanab Creek) in Grand Canyon (Valdez and Ryel 1995).

The confluence of the Little Colorado River with the main stem is a popular area for both the humpback chub and recreationists floating the river because the Little Colorado flows with water that is much warmer than the main stem. This warmer water is a critical element in the successful spawning and survival of young humpback chub. None of the humpback chub aggregations outside the LCR region have large enough numbers of adults to form viable populations without input from the LCR population (Valdez and Ryel 1995). Recreational use in the lower Little Colorado and at the confluence, namely swimming by boat passengers, may be negatively affecting spawning potential and successful reproduction and survival in this area. Humpback chub spawn between March and May, and chub from the main stem usually stage at the mouth of the Little Colorado in March and move variable distances upstream during April to June, apparently to spawn.

The 1989 CRMP limits of acceptable change indicates that activities will be restricted in known humpback chub habitat at the confluence of the Little Colorado and Colorado Rivers (Appendix B, page B-13). However, review of the commercial operating requirements (Appendix C) indicates that camping restrictions are in place from mile 60.5 to 65.0 on the southeast (left) side of the Colorado River. A visitation restriction is in place at the Hopi Salt Mines (RM 63.5). However, despite the language in the 1989 CRMP, no visitation restriction has been imposed at the confluence of the LCR (RM 61.5).

The U.S. Fish and Wildlife Service made specific recommendations for conservation of endangered and native fishes in the Grand Canyon (Gorman 1997). These recommendations

included the directive to protect key tributary confluences for native fishes. Humpback chub have been collected (both adults and young of the year) at the confluences of Little Colorado, Paria, Bright Angel, Shinumo, Kanab and Havasu creeks. The tributary confluences provide some of the most productive and warm habitat for native fishes in the Grand Canyon. Therefore, management strategies to enhance or stabilize native fish populations must include tributary confluences. Some of these tributaries (in particular the Little Colorado, Bright Angel, Shinumo, and Havasu) are heavily affected by human activities during summer months, including destruction of benthic communities, building dams, and disposal of human wastes. At present we do not know the long-term effects of perturbation of these environments on native fishes (Gorman 1997). The recommendations of the Fish and Wildlife Service are to protect the tributary confluences mentioned above from undue disturbance during spring and summer months to minimize impacts on spawning and rearing life stages of native fishes. As an interim measure, the lower 500 meters of the Little Colorado River and the lower 200 meters of other tributaries should be protected during the period February – July. This period encompasses the spawning season and early life history stages of native fishes. The Fish and Wildlife Service's recommendations conclude by stating that at other times of the year the amount of traffic and activities of tourists should be controlled to minimize impacts.

Recommendation 5: The scope of the CRMP should include riparian vegetation zones

Riparian communities in Grand Canyon have undergone substantial changes since closure of Glen Canyon Dam in 1963. The changes in native riparian communities have been caused mainly by changes in annual hydrograph, the severe reduction in sediment supply, and the introduction of non-native species. Pre-dam, native riparian vegetation consisted of two distinct bands of vegetation. The lower band was annually flooded, and the vegetation was scoured by sediment deposits. The upper band was infrequently flooded. Currently, four distinct bands of vegetation are present. The lower band supports native wetland and riparian vegetation. These communities are comprised mainly of ephemeral herbaceous vegetation, salt brush, and cacti. Willow line the shore. The old high water zone community occurs mainly in a narrow strip of five to ten meters in width. This community is comprised mainly of long-lived woody vegetation. A new community type has become established in the lower zone in the relatively stable post-dam hydrological regime. Marshes comprised of cattail, horsetail, sedge and rushes have become established in low-lying areas.

The old high water zone community is important for resident and migratory birds, as it provides a large portion of food resources to birds within the Colorado River ecosystem (Yard and Cobb 2001). Vegetation provides shelter and structure for nesting or foraging for the insect and animal community. The riparian communities below the old high water zone are potentially impacted by recreational use of the river. Because ninety-five percent of the sediment is trapped by Glen Canyon Dam, the beaches downstream are eroding due to the river's clear, sediment-free flows (Kearsley 1994). Many pre-dam beaches are now considerably smaller, and some have disappeared completely. In addition, camping beaches are being eroded through gullying induced by monsoon rainstorm runoff, a situation believed to be related to the lowered main stem base levels, as degraded beaches are not replenished by annual flooding.

An increase in user days will result in an increased use of existing sand bars, and will most certainly result in increased impacts to native vegetation. Trampling of vegetation and concentration of camping on open sand beaches negatively affect these areas and the species that depend upon them. Rubin *et al.* (2002) indicate that sandbars and banks are essential components of the Colorado River ecosystem and were distinctive features of the pre-dam river landscape. Emergent bars create terrestrial habitats for riparian vegetation and associated fauna, and they create areas of stagnant and low-velocity flow that is utilized as habitat by the humpback chub and other native fishes. The establishment of riverine marshes provides habitat for a limited number of endangered southwestern willow flycatchers. Valdez and Ryel (1995) state that significantly higher catch rates indicate vegetated banks and sand banks are selected by humpback chub (as well as talus, debris fans over cobble bars, and bedrock). These vegetated shorelines are used by subadult humpback chub and appear to serve as replacement cover that was formerly provided by high turbidity and irregular shorelines with high food production (Valdez and Ryel 1995).

The old high water zone community is where archaeological resources are present. More than 250 archeological sites exist along the river, and many more occur upslope and in the tributaries (Balsom 1999). Some are the subject of regular visitation, and the park conducts regular monitoring of these resources. Visitor impacts such as the creation of trails and collection of artifacts have been noted at archeological sites and locations of traditional importance. Kunde *et al.* (2001) found approximately 25% of monitored sites had visitor impacts. Graffiti was observed at two rock art sites by the Southern Paiute Consortium (Drye *et al.* 2001), and visitor impacts have been observed at two important Navajo sites (Begay 2001).

Recommendation 6: The scope of the CRMP should include control of non-native species, visitor impacts and interactions with sensitive native species

Stevens and Ayers (2002) present alarming information about non-native species in the Grand Canyon region: They state that non-native species are one of the largest threats to the integrity of the river corridor ecosystem, its native fishes and its riparian and desert habitat. Looking at plants alone, they found a total of 155 alien vascular plant species in 42 families and 112 genera have been detected in the Grand Canyon region, making up 10.4% of the region's 1485 plant species. Saltcedar is a dominant alien shrubby tree in riparian and lacustrine shoreline habitats between 360 m and 2150 m elevation in the region, and quickly colonized the post-dam Colorado River corridor margins. Of particular concern is the role *Bromus tectorum* may play in fire frequency. At least 10 anthropogenic fires have occurred in the Colorado River corridor in the past 24 yr, all of which were largely carried by brome grasses. While the role of *B. tectorum* in fire frequency on the canyon rims is unknown, it may be considerable. Because of the significant threat posed by a wide array of non-native species with the Park, the Park Service must make every effort to manage or eliminate them within the Grand Canyon.

The Park Service should evaluate the effects of moving boats on native water birds such as herons and waterfowl. These birds have been known to fly downstream in front of boats for distances of up to 50 miles (pers. comm. Larry Stevens). This is likely to affect the fitness of these birds. An evaluation of these effects and an exploration of possible mitigation measures should be included in the DEIS.

A wintering bald eagle (*Haliaeetus leucocephalus*) population occurs almost exclusively throughout the upper half of the Grand Canyon (in Marble Canyon) and on both Lakes Powell and Mead. During the winter peak (late February - early March), bald eagles ranged in number from 13 to 24 birds between Glen Canyon Dam and the confluence with the Little Colorado River (Sogge *et al.* 1995). A concentration of eagles occurred at the mouth of Nankoweap Creek in the late 1980s and early 1990s, but in 1995, Nankoweap flashed, altering the delta and the spawning habitat of trout at that location. After that, the winter population of bald eagles has not again been significantly concentrated (pers. comm. Elaine Leslie). The bald eagle population has not been monitored since 1995, and its present status is poorly understood (pers. comm. Larry Stevens).

Wintering bald eagles extensively use non-native trout and they congregate in late February through early March, especially in warm winters when Nankoweap's water temperature increases and trout move into the creek to spawn. Unlike other wintering populations of bald eagles, those in Grand Canyon are extremely sensitive to humans, flushing >0.5 km from approaching boats or hikers (this greater sensitivity to humans may be due to some form of claustrophobia in the narrow confines of the canyon) (pers. comm. Larry Stevens). Brown and Stevens (1997) indicate that bald eagle distribution in Grand and Glen Canyons appears to be negatively related to human disturbance. They conclude that the high intensity of recreation in the upper reaches of Grand Canyon is responsible for the general rarity of bald eagles in this area. The CRMP must redress those impacts.

Until the Park Service is fully confident that it possesses a thorough biological inventory and is able to document how biological resources have been affected by human use of the corridor, the Park Service should not increase the level of human use of the Colorado River. In fact, the Park Service must be prepared to meet its legal mandate by reducing visitor use overall, seasonally, or spatially if such use is shown to adversely impact canyon or river resources. A detailed analysis of how the current use levels are affecting resources should be conducted. We believe current use is adversely affecting the Grand Canyon ecosystem. The implementation of proper mitigation measures combined with enforcement may assist with offsetting some of these impacts.

We would like to see the Park Service closely analyze the following mitigation measures in the DEIS:

- 1) While we are not aware of any direct evidence that visitation negatively affects aquatic resources, we believe that immediate action is necessary in some tributaries known to be of importance to the endangered humpback chub. We recommend that the Park implement the recommendations of the U.S. Fish and Wildlife Service (Gorman 1997) for the humpback chub while also studying the effects of visitation in the tributaries within the Park. Specifically, we recommend the following: a) establish a visitation restriction on the lower 500 meters of the LCR between February and July to protect the humpback chub during spawning and early life stages; b) establish a visitation restriction on the lower 200 meters of other important tributaries including the Paria, Bright Angel, Shinumo, Kanab, and Havasu creeks to protect the humpback chub during spawning and

early life stages; c) allow for limited visitation at the lower ends of the LCR, Paria, Bright Angel, Shinumo, Kanab, and Havasu creeks between August and January, and; d) complete a well-planned scientific study conducted by qualified PhD level researchers to determine the effect of visitation at all tributaries of management concern on response variable such as native fish, benthic algae, invertebrate drift, and water quality, among others.

- 2) Protect vegetation and archeological resources in the old high water zone by imposing a general visitation closure of this zone, with exceptions provided only for visitation of specifically named areas.
- 3) Protect vegetated shorelines and sand bars from trampling by restricting camping use to a limited number of these beaches, thereby allowing some beaches to remain undisturbed by recreational use.
- 4) We urge the Park to develop a visitor/shore time (VST) index, which compares management alternatives by how much or how little human shore time is associated with them. This index could be used to set limits on allowable impacts to sand bars and vegetation.
- 5) January through March, private and science river runners should pass through Nankoweap Rapid (RM 52) in the mid-afternoon hours to avoid disturbing eagles and not visit the creek mouth during that time period. Motorized trips should try to avoid flushing birds along the river.
- 6) Limit recreational use of the upper half of Grand Canyon late February to early March to minimize human disturbance to wintering bald eagles.

In addition, we would like the Park to consider the following actions in the DEIS:

- 1) Consider a shorter time interval between revisions of the CRMP. For instance a 5-year interval is more appropriate given the natural resources in the corridor and may prove to be more cost-effective than revisions every 10-15 years, as is the case currently.
- 2) Information on the river ecosystem should be provided and annually updated in a "State of the Colorado River Ecosystem" report, describing existing conditions, use levels, changes, and program implementation success would seem appropriate once the new CRMP is in place. The Grand Canyon Monitoring and Research Center (GCMRC) had such a report, but it does not seem to be updating the report, and the report does not include much information on visitation, safety, and visitor impacts. Such a report, made available to the public on the Internet, is essential for providing information and demonstrating federal accountability.
- 3) External expert review is important and would help Grand Canyon National Park assure the public that its decisions are credible and are effectively implemented. The Park should consider developing an independent scientific panel to help oversee management directions, project results and integration of that information into improved management planning. Such a panel should be composed of experts in aquatic and terrestrial biology, fisheries, cultural resources, recreation, and ecosystem ecology. Such a panel can be put together using the services of the Ecological Society of American, the U.S.G.S. GCMRC office, or the National Academy of Sciences.

- 4) The controversy over the taxonomy of the endangered Kanab ambersnail (*Oxyloma haydeni kanabensis*) at Vaseys Paradise (RM 32) should be resolved promptly and scientifically (Meretsky *et al.* 2002). If that snail population is not Kanab ambersnail, then it is not an endangered species, but another endemic invertebrate. Resolution of that controversy will help clarify the Park's role in visitation at Vaseys Paradise and river management in general.
- 5) Information archival is an essential component of adaptive ecosystem management, as long-term studies and results are needed. The Park should guarantee the archival, long-term management, and accessibility of scientific information, particularly electronic data.

Conclusion

We appreciate your consideration of these comments. We believe the Park Service is at the cusp of an important decision-making process and we encourage you to determine alternatives based on what is known and also what is unknown about the effects of recreational use on the river corridor and its fragile riparian and aquatic resources. We request a copy of the Draft Environmental Impact Statement and we would like to remain on your mailing list for this project.

Sincerely,

/s/ Geoff Barnard

Geoff Barnard
President
Grand Canyon Trust

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Appendix

A Summary of Budgetary Shortfalls at the Grand Canyon National Park Science Center

Despite the importance of resource protection in Grand Canyon National Park, a mere 8.5% of the total Park budget is allocated to the Science Center. The budget for the Science center is under funded by approximately 30%, with an estimated shortfall for fiscal year 2003 of \$250,000 (preliminary authorization). Vacant positions currently include the Park Archaeologist and Senior Scientist. In addition, the Park has not been given the authority to hire two additional positions that they lost in 2000 and 2001, the Museum Curator and the Wilderness Coordinator. If these necessary positions were added back into the budget, the budget deficit would be increased by \$130,000-150,000, for a total of a \$380,000-400,000 shortfall. In order to make up the deficit, the Science Center will be required to assume a \$135,000 cut which will mean that they may not be able to fill the positions of Park Archaeologist and Senior Scientist until half way through the year.

Grand Canyon National Park needs more money to hire permanent employees. This money should and can be provided through an increase in base funding through direct appropriations or through a change in the Park Service regulations restricting the use of Fee Demo money so that permanent employees can be hired.

While Fee Demo money is being allocated to the completion of the six highest priority resource management plans in fiscal years 2003-2005, the Park estimates that it needs at least \$2,000,000 for the completion and revision of several other resource management plans, including the overarching Resource Management Plan (RMP). The Park is currently awaiting guidance related to the revision of this plan, which will need to begin shortly after the completion of several specific resource management plans.

In the 1997 RMP the Park clearly outlines its needs as they relate to completing necessary resource protection. Science Center staff currently number 21 full time positions (FTEs) (which includes the unfilled positions of Park Archeologist and Senior Scientist, but not the Museum Curator or Wilderness Coordinator). The RMP indicates that 30 full time employees are needed to adequately do the job. To fill these 7 additional positions, assuming the Museum Curator and Wilderness Coordinator positions are filled shortly, the cost is at least \$425,000/year (without supplies, travel, equipment, etc.).

The Park indicates that some of the most critical work that is not getting completed is resource inventory and monitoring. In the wildlife and fisheries program for example, historical funding has been inadequate to establish an active Park-based wildlife and fisheries management and monitoring program. Basic inventory and monitoring data have not been available to the Park, and, while much work is conducted by outside researchers, agencies, and university scientists, these data are not always returned to the Park.

Necessary work along the Colorado River corridor includes exotic species control and native species restoration (estimation is 2 FTEs as well as seasonal and term positions; total cost is about \$350,000 per year). The Park needs to complete a visitor impacts monitoring and

mitigation program (estimation is 2 FTEs as well as seasonal and term positions; total cost is about \$350,000 per year).

The Park's Science Center (SC) must have money to complete inventory, monitoring, and research, as this information will allow the resource professionals to know the status of the resources and the effects of activities on those resources. The SC must have money to complete their Resource Management Plans, as these will inform the Park about how to manage the resources over a period of 10-20 years. The SC must have money to complete active management such as disturbed land restoration and reintroduction of extirpated species, among others. The SC must have money to complete compliance work for Park development projects. A rough estimate is that the Science Center needs a total of 3,000,000-3,500,000 per year, or almost double their current base funding of \$1,698,000.

In short, Science Center is severely underfunded. The funding of the Science Center at required levels as determined by Park resource staff will allow the Park to have a more complete understanding of its existing resources, and the impacts of human use and visitation on these resources. This is absolutely necessary to evaluate the continued resource effects on the Colorado River ecosystem.