DAM AND RESERVOIR OPERATIONS

BY Steve Glazer

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The Southwest region was developed for agriculture and urban centers by the construction of large and small dams and reservoirs. Because of the arid conditions, most of the water in the region is in the form of snow in the winter and rains that come as seasonal events. The primary way humankind has utilized this seasonal hydrology is to collect and store the high flows from storms and snowmelt in reservoirs.

Human intrusions into the natural variability of nature have wrecked havoc on native aquatic and riparian flora and fauna. Native species have evolved and been sustained by responding to highly variable conditions. Dams have had a dramatic impact on the ability of native species to continue to survive. They can no longer fully utilize their habitat. Dams block their ability to migrate from where they spawn to where they mature and over-winter. The seasonal water temperature variations that trigger different life-cycles have been replaced by lower, constant temperatures from dam outlets that discharge from the lower strata of the stored water. By changing river water temperature, dams have caused the population of many native aquatic species to crash. In addition, sediment and nutrients settle into the still water of reservoirs and are unavailable downstream. Species that have evolved over millions of years are now facing extinction because of human activities over the past 100 years of dam building.

Although our landscape can't be reverted to pre-dam conditions without major social disruption, there are opportunities to improve dam operations and reservoir management. This would reduce the impact of dams on which our economy and social structures have become reliant. The strongest tools available to accomplish change are the Endangered Species Act (ESA), National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA).

The falling populations of native species have caused several to be listed as threatened or endangered under ESA. These listings require federal action to protect and recover these species. Federal actions trigger NEPA compliance requirements, which require an environmental evaluation of the impacts of reasonable alternatives to accomplish the goal of reversing the decline of these species. FLPMA requires the Forest Service and Bureau of Land Management to develop management plans to protect the ecological integrity of public lands, including aquatic and riparian habitat.

Since the Bureau of Reclamation built most of the large federal dams in the southwest, and is the lead agency responsible for implementing ESA and NEPA compliance on these projects. Most of these facilities have either gone through, or are currently engaged in NEPA compliance. The purpose of most of these processes is intended to either change dam operations to reduce or mitigate their

negative impacts. As an example, the Upper Colorado River Native Species Recovery Program recommends changes to the release of water from the Flaming Gorge, Navajo and the Aspinall Unit dams. Other Recovery Program activities include: 1. non-native fish control: 2. habitat improvements: 3. supplementation of native fish populations; and 4. conducting scientific research to learn more about the native fish needs and behavior. This program is funded by a portion of the revenues from hydropower generation of these dams and from congressional appropriations.

Historically, the releases from dams in the Southwest have been dictated by hydropower demands and agricultural water delivery contracts. The timing of these releases is one of the most damaging threats to native fishes. Hydropower demands occur during the daylight hours causing exaggerated diurnal (daily) river flows. Agricultural interests demand that water be released at a steady flow throughout the growing season. There is also the interest of flat-water recreational anglers who have promoted the stocking of reservoirs and downstream waters with non-native fish that prey on and compete with native fish. The goal of improved operations should focus on returning some semblance of the natural hydrograph, i.e. higher seasonal flows in the springtime to help trigger reproductive behavior, reduction of diurnal variations, and maintenance of low-flow periods. We don't have to necessarily restore native flow regimes, but we should recreate some of the variability to mimic the natural patterns to which fishes have adapted. New dams can be designed with and existing dams can be retrofitted with temperature control devises to mix water from different strata of the reservoirs to improve habitat for the fish.

There are very powerful political forces lobbying for power suppliers/users and farmers to maintain the status quo of dam operations. It is important for Sierra Club members to be the voice for change to protect those species that can't speak for themselves. There are ample opportunities for Club members to affect change throughout the decision-making processes. Each federal action that is required to evaluate measures to protect endangered species has a scoping (identification) of the issues and an opportunity to propose or modify alternatives, a draft report evaluating the alternatives and then the choosing of a preferred alternative. Each of these decision points give Club members the opportunity to participate by submitting comments regarding social, cultural, economic, scientific and political factors. If we believe the process is flawed, we have the opportunity to appeal the decision both administratively and judicially. It is important that we exercise our opportunities to pressure for improvements moving toward management approaches that restore ecological integrity to rivers impacted by dams. These changes we seek will likely increase the price we pay for both energy and food. It is important for Club members to educate the public about the implications of low food and energy prices. If we have any hope of gaining public support, we must convince the public that the cost is too high for exploiting our natural resources.

Sometimes it is important to gain public attention to achieve our goals. This is when the Club can rally its grassroots to gain the attention of the press and policy-makers.

Other times it is more important to garner our scientific and political expertise to get involved in the detailed processes of decision-making. And, at other times, volunteers need to go into the field and attend meetings to see that prescribed actions are being implemented properly. It is important for us to employ all of these strategies to be effective. The Club is well suited to utilize all of these strategies. This will require effective communications between groups, chapters and regional committees of the Club.