A Century of Fisheries Management in Grand Teton National Park

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Abstract

Fisheries in Grand Teton National Park (GRTE) have historically been managed by the Wyoming Game and Fish Department (WYG&F). Management activities, including fish stocking, can be traced back to the early 1900s. Over the years, several non-native species of fish have been introduced. The management of fisheries in Grand Teton has also been affected by the Bureau of Reclamation's management of flow regimes from Jackson Lake Dam. In this paper, agency missions, management policies, and management actions of the National Park Service (NPS) and WYG&F as they relate to fisheries resources in GRTE are compared and contrasted over the course of the last century. At present, improved interagency cooperation and communication show a vast improvement over past practices, and should result in improved outcomes for fisheries management in Grand Teton National Park.

Introduction

A century of fisheries management in Grand Teton National Park (GRTE) has resulted in a mix of healthy native populations and isolated pockets of exotic species. The mission of the Fisheries Division of the Wyoming Game and Fish Department (WYG&F) and the purposes of the National Park Service (NPS)'s "Heritage of Fishing" overlap as guidance documents for managers. Both encourage science-based management and some level of public involvement, and both are committed to conservation of fisheries resource for future generations.

History of WYG&F and NPS philosophy

Until 1950, when GRTE's boundaries were enlarged to include the Snake River and its tributaries, its fisheries resource was managed solely by the state of Wyoming. From the time its first hatchery was established in 1894 until the late 1930s, the Wyoming State Fish Commission believed that Wyoming streams had been depleted of fish, and the public wanted re-stocking to maintain good angling (WYG&F 1993). Annual stocking was considered essential. By the mid-to-late 1930s, some state fisheries biologists had begun to show signs of concern about the ecological consequences of fish stocking. Simon (1940) "deplored promiscuous fish planting" and recommended: (1) no stocking in virgin waters without investigation and (2) priority for stocking only native trout. However, there seemed to be no follow-through from these recommendations to actual field activities. In fact, throughout this time period, when the park consisted of only the Teton mountains, lakes such as Phelps, Trapper, Bearpaw, Leigh, and Bradley were stocked with a variety of species, including non-native grayling and brook trout and native Yellowstone cutthroat and Snake River cutthroat trout.

In spite of its mandate to leave resources "unimpaired for the enjoyment of future generations," there was little understanding of ecology or ecosystem functional relationships evident in the National Park Service's resource management philosophies during the early 1900s. To enhance public enjoyment, aquaculture and fish-stocking to enhance recreational fishing was considered to be quite appropriate (Tilmant 1999). Managers conducting stocking activities within parks seldom considered the potential impacts to native species (Schullery 1979). The NPS issued its first written management policies in 1936, but they allowed park superintendents to stock waters previously barren of fish.

Throughout the 1940s, and even after GRTE's enlargement during the 1950s and 1960s, the

practice of stocking both native and exotic fish species was continued by WYG&F. There was a shift in emphasis from subsistence fishing toward recreational fishing. As staffing and facilities expanded, WYG&F personnel were able to spend less time at the fish hatchery and more time conducting investigations of fish habitat and biology. From the 1980s through the 1990s, there was increased emphasis on habitat restoration activities and collaboration with other agencies.

NPS policies did not recommend the phasing out of stocking programs until 1969. Management policies in 1988 allowed the stocking of reservoirs for recreational fishing. In 1992, the NPS adopted its recreational fisheries program, "A Heritage of Fishing." The *NPS Management Policies 2001,* in effect today, still permit the stocking of both native and exotics under special conditions, but under the caveat that stocking will not impair natural resources or processes.

Rivalry vs. partnership

Shortly after the enlargement of Grand Teton National Park in 1950, NPS and WYG&F officials met to discuss the development of a cooperative fisheries agreement. Fisheries in GRTE were unlike those in Yellowstone National Park, which was created before Wyoming was a state (thus, Wyoming "could not lay claim to any of the wildlife in Yellowstone") (Unknown 1950). Although both parties seemed amenable, no agreement was signed. Negotiations continued throughout both the 1950s and 1960s, with each agency posturing for control of the fisheries resource. Finally, in 1973, a memorandum of understanding was signed by both agencies. This umbrella agreement included GRTE. The document, however, had little substance directly related to fisheries management.

Early management activities in the Snake headwaters basin

Fisheries management activities in the Snake River headwaters date back to the late 1800s. Within GRTE, activities through the 1950s were mainly limited to WYG&F stocking activities. Which park waters were stocked? It would be easier to answer, "which park waters weren't stocked?" Almost every water in the park was stocked with anything from brook trout to steelhead, based mostly on what was available from hatcheries. Later, the type of species stocked was dependent upon elevation, with non-native golden trout being stocked at the highest elevations, non-native brook trout at the next with native cutthroats, and non-native rainbow and brown trout stocked at the lower elevations (WYG&F 1993).

Grand Teton National Park hired a fisheries biologist in the mid-1960s. While information was shared between agencies, there was little other cooperation. Special studies on the biology of the Snake River cutthroat trout were conducted by both agencies. Throughout the 1960s and 1970s, WYG&F's philosophy was one of "husbanding the natural supply of fish, keeping them healthy and productive to meet anglers' desires" (WYG&F 1993). GRTE's fisheries biologist attempted to pursue a variety of management strategies to improve the status of the native cutthroat trout, but for the most part, these strategies were not supported by the park's upper managers (P. Hayden, pers. comm.). These strategies included slot and creel limits, that is, limits on the fishing open season and on the numbers of fish that could be kept (recommended by GRTE in 1972, adopted by WYG&F in 1986) and catch-and-release fishing below Jackson Lake dam (never actually proposed due to park managers' opinion that the state would take a "dim view" of this recommendation). Fishing regulations for 2004 included a creel limit (six trout per day, only three of which could be Snake River cutthroat); and a slot limit (only one Snake River cutthroat over 12", only one trout of any kind over 20"). The winter fishery is catch-and-release for native cutthroat trout.

Fisheries management in GRTE has been further complicated by the Bureau of Reclamation's operation of Jackson Lake dam, which was originally constructed in 1906, rebuilt in 1911, and enlarged to its present size in 1916. Exotic lake trout colonized Jackson Lake after moving down the Snake River from Lewis and Shoshone lakes in Yellowstone National Park shortly after they were introduced there in 1890. NPS management strategies for this exotic species are confounded by the fact that prior to the dam's construction, Jackson Lake was an existing natural lake, which was artificially enhanced by the dam. NPS policies would apply different strategies to a natural lake than they would to a reservoir. Since 1937, Jackson Lake has been managed by WYG&F for trophy lake trout. It is still closed to fishing during October to protect lake trout spawning.

Recent management activities in the Snake headwaters basin

In the late 1980s, WYG&F recognized the need to establish minimum winter flows in the Snake River

below the dam to protect native cutthroat trout. National Park Service attempts at negotiating this need with the Bureau of Reclamation (BOR) were unsuccessful until October 1990, when a contract between the state of Wyoming and the BOR was signed that stipulated a 280-cfs minimum winter flow for the Snake—an action that protected critical habitat and provided much-needed connectivity for the native species.

Since 2001, GRTE and Jackson's WYG&F have developed and maintained an excellent working relationship. They conduct annual meetings to discuss fishing regulation updates and changes, field season activities, and potential collaborative research projects. During one of these meetings, park staff asked about the need for continued stocking of lake trout in Jackson Lake reservoir. WYG&F then undertook a review of past sampling data in Jackson Lake. The resulting report was completed in 2004. One management recommendation of that report was to phase out lake trout stocking due to low numbers of stocked lake trout in the creel (i.e., people were reporting catching low numbers of stocked lake trout) and no apparent correlation between trend netting catch per unit effort (i.e., numbers stocked and numbers captured in annual netting population surveys) (Stephens and Gipson 2004). The lake trout stocking program in Jackson Lake reservoir will be phased out by 2007. The report also revealed evidence that the absence of stocked lake trout might benefit other native species, including Snake River cutthroat trout, due to the increased availability of the zooplankton food source. WYG&F still stocks native cutthroats in Two Ocean Lake. This practice has been discontinued in Trapper and Bearpaw lakes, mostly due to increased communication and cooperation between GRTE and WYG&F.

The park and WYG&F have been involved in a variety of cooperative ventures, including the restoration of the upper Bar BC spring creek; a fish passage improvement project at Two Ocean Creek culvert; and an inventory of fish in high alpine lakes. They are also collaborating with neighboring agencies such as the U.S. Geological Survey (USGS) and U.S. Forest Service (USFS) on other studies that should yield valuable information for future fisheries management decisions. A bioenergetics modeling project being conducted by the USGS Jackson Field Station will help the park to determine whether lake trout are impairing natural resources or processes in Jackson Lake reservoir. These same researchers also conducted an evaluation of the native trout fishery using WYG&F records that confirmed an apparent trend between the total number of redds and the median daily discharge below the dam each year. This link between good water years and increases in juvenile habitat may have implications for negotiating spring flow releases from the dam with the Bureau of Reclamation.

A researcher from Utah State University, working for the USFS, recently completed an inventory of fish in the Snake River tributaries. The fieldwork was conducted with USFS crews in conjunction with WYG&F personnel. Approximately 251 km on 43 streams in GRTE were surveyed between 2002 and 2004 (Novak 2004). These surveys have provided invaluable information about the locations of exotic fish species (e.g., rainbow trout, brook trout, and rainbow–cutthroat hybrids) and the relative distributions of the native Yellowstone and the Snake River cutthroat trout. They have also identified areas for management concern, such as the location of anthropogenic barriers to fish passage and other habitat improvement opportunities.

The future

What is in the future of fisheries management for Grand Teton National Park? There will continue to be cooperative studies among WYG&F, GRTE, and neighboring agencies. The park is hoping to develop a fisheries management plan in the near future. Both GRTE and WYG&F will continue to work cooperatively to encourage the Bureau of Reclamation to schedule releases that are more representative of natural flows of the Snake River. Will there be catch-and-release-only regulations for the Snake River cutthroat? It is hard to say. But with improving interagency cooperation and communication, improved outcomes for fisheries management in Grand Teton National Park should be imminent.

References

Novak, M. 2004. Yellowstone and Snake River cutthroat trout subspecies distribution mapping. *2004 annual report and summary of accomplishments.* Moose, Wyo.: Grand Teton National Park Science and Resource Management Office.

Schullery, P. 1979. A reasonable illusion. *Rod and Reel* 1(5):44–54.

Simon, J. R. 1940. Report of Fish Division. Pages 38–52 *in* R. Grieve, Biennial report of the Wyoming Game and Fish Commission, 1939–1940. Cheyenne, Wyo.: Wyoming Game and Fish Department.

Stephens, T. J., and R. D. Gipson. 2004. Summary of Jackson Lake fishery investigations 1971–2003, with

management recommendations, *in* Wyoming Game and Fish Department, Fish Division, administrative report (January). Cheyenne, Wyo.: Wyoming Game and Fish Department. 50pp.

Tilmant, J. T. 1999. Management of non-indigenous fish in the U.S. National Park System. Paper presented at a symposium on ecological and genetic effects of aquaculture on the environment, 129th annual meeting of the American Fisheries Society, Charlotte, North Carolina, August 29–September 2.

Unknown. 1950. Teton Park fishing agreement discussed. *Wyoming Wildlife* XIV (December), 15–16.

Wyoming Game and Fish Department. 1993. Wyoming fish management, 1869–1993. Administrative report (July). Cheyenne, Wyo.: Wyoming Game and Fish Department.