Sub-Unit Summary Form and Example Writeup

Source: Appendix A - Rock Creek Subbasin Report

FISHERIES ANALYSIS

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Fisheries Issues

1) How does the current status, composition, and distribution of key salmonids compare with historic conditions in the Rock Creek Sub-basin?

2) How have past human activities, including; introduction of exotic salmonids, road construction, timber harvest, dam construction, and livestock grazing affected the status, composition, and distribution of key salmonids in the Rock Creek Sub-basin?

by: S.Gerdes
date: 3/24/98

Sub-unit name and HUC #: Mainstem

Major drainages include: Mainstem of Rock Creek, between the mouth and the forks confluence
Size:
%BLM:
%FS:
%Private:
MA summary:

Issue : The effects of introduced salmonids, sport fishing management, land use practices on private land, roads, recreation, dams and irrigation diversions.

Historical//reference condition

ICBEMP or UCRB validation --(GIS layer or data finding): BDBFISH4 and BDBFISH6 used to verify UCRB findings. Historically, bull trout populations were well connected throughout the CRB. ERU 9, the Upper Clark Fork, contained populations of both key salmonids in all subwatersheds. Habitat has been fragmented, and in many cases isolated, resulting in population declines throughout their range. Distribution of existing populations is patchy (DEIS Ch2, pg 136). WCT are widely distributed but genetic integrity is uncertain (DEIS Ch2, pg 140). Eastern brook trout and rainbow trout are widespread (DEIS Ch2, pg 129).

Rock creek was a major bull trout and westslope cutthroat trout drainage in western Montana. It likely contained fluvial and resident populations of both native species within the drainage, and served as a recruitment source for the Clark Fork River. Connection between Rock Creek and the Clark Fork River was severed by construction of Milltown dam. Mining/smelting activities upstream of Rock Creek resulted in extirpation of remaining native trout populations inhabiting

the Upper Clark Fork, and fragmentation of other sub-populations inhabiting upstream tributaries.

Fish stocking began in the began as early as 1928 in tributaries, and continued until 1972 in the mainstem. Records indicate cutthroat trout (likely yellowstone cutthroat trout) were planted in tributaries, while rainbow trout were stocked in the mainstem. Genetic integrity of WCT has likely been impacted by these activities. Sport fisheries management began to be directed towards trophy fishing for introduced species (rainbow and brown trout) in the late 1970s, using slot limits and catch-and-release strategies. Whirling disease was confirmed in the drainage in 1996.

Settlement along Rock Creek began relatively early (1880s). Much of the bottomland was converted to agricultural use - livestock grazing and hay production, and tributaries were diverted to supply irrigation needs. Mining was also an early use along the mainstem and tributaries.

The Rock Creek road (#102) was constructed in the 1920s, often encroaching on the stream channel. Campgrounds were developed along the length of the stream corridor in conjunction with the road.

Information used: MFWP Rock Creek fish studies, MFWP fish stocking records, and Forest Service fish/stream surveys.

Current Conditions:

ICBEMP or UCRB validation --(GIS layer or data finding): BDBFISH4 and BDBFISH6 used to verify UCRB findings. Restricted areas of strong populations of native salmonids are present in ERU 9 (DEIS Ch2 pg 156 and AEC pg 1262). Introduced species are widespread (DEIS Ch2 pg 129). Strong populations of native salmonids occurred most frequently in areas with lower road densities (AEC pg 1347). WCT are widely distributed but genetic integrity is uncertain (DEIS Ch2, pg 140).

Info needs and/or data gaps: Interactions between native and introduced salmonids, genetic analysis of cutthroat trout, the effects of sport fishery management on native salmonids.

Data utilized: MFWP fish stocking records, MFWP fish sample surveys, MRIS database

Source: MFWP and B-DNF and Lolo NF files
Scale: Stream reach
Date of collection: 1950s -1997
Confidence in data (low,med,high): medium

Exotic species predominate throughout the mainstem. Bull trout probably use the mainstem primarily as wintering habitat and as a migration corridor, although low numbers of fish are found during all seasons. Westslope cutthroat trout are widespread, although numbers appear to be depressed in the downstream reaches. Hybridization with rainbow trout is likely widespread.

Eastern brook trout exist in low densities throughout the mainstem. Interactions between EBT and native species are probably not significant in this reporting unit. Brown trout and rainbow trout are present in high numbers throughout the mainstem. These two species predominate in

most of the length of the mainstem. Native salmonids become more prevalent in the uppermost reaches. Hybridization between WCT and rainbow trout is widespread.

The goal of current sport fishing management in Rock Creek is to provide the opportunity to catch large sized fish. This opportunity is provided through the application of species specific limits. Current limits require release of all rainbow trout, a hybridizing species with westslope cutthroat trout, and release of large brown trout, a potential competitor with, and predator on, native species. Fishing regulations stipulate the release of all cutthroat trout and bull trout. Hooking scars are common on WCT, indicating that some mortality associated with fishing is probably occurring.

Rock Creek flows through five watersheds in the sub-basin. The majority of the length of the stream between the mouth and Ranch Creek is bordered by private land. Between Ranch Creek and Williams Gulch, the majority of the land adjacent to the stream is National Forest. Upstream of this point, Rock Creek flows primarily through private land. Private land use in the lower portion of the drainage is predominately residential. In the upper basin, ranching is the main land use.

These differing uses of private land have affected the stream in similar ways. Road densities are high, streamside areas are often heavily used, streambanks in many areas have been riprapped to contain the stream within it's current channel, nutrient inputs may be elevated due to both human and livestock use, and riparian vegetation has widely been altered and now consists of less resilient species. These uses have reduced streambank stability, changed channel morphology, possibly changed water temperatures and nutrient levels, and increased sediment introduction, resulting in reduced habitat capability for native fish.

Rock Creek Road #102 has likely had significant adverse effects on physical stream conditions and aquatic habitats in the mainstem of Rock Creek. The road encroaches on the stream channel in many locations. Riprapping where the road forms the streambank confines the energy of the stream and causes stress on downstream segments, destabilizing the channel as the stream attempts to adjust to an artificial confinement. The proximity of the road, and road maintenance activities, route fine sediment to the stream and have reduced riparian vegetation and stream shading. Other roads, throughout the sub-basin, also pose a variety of threats to water quality and fish populations in the mainstem - through fish passage blockage, sediment delivery, changes in flow and other mechanisms.

Recreational uses such as camping, picnicking and fishing directly impact riparian vegetation, indirectly affecting streambank conditions in localized areas.

No dams exist on the mainstem of Rock Creek. Milltown dam, on the Clark Fork river, prevents upstream passage of migrating fish. East Fork dam, on the East Fork of Rock Creek, operates in a similar fashion - prevents fish from returning to their natal stream. No estimate of the number, location, or effect of irrigation diversion structures has been made for Rock Creek. It is likely some losses of fish occur as a result of these structures.

The mainstem of Rock Creek is functioning at risk hydrologically due the combined effects of many human activities. Native fish species are present throughout the drainage, although the stream contains strong populations of exotic fish. Hybridization between WCT and rainbow

trout is widespread in the mainstem and has also documented in tributary streams between bull trout and eastern brook trout. Brown trout are prevalent throughout the mainstem and may be affecting native species through a variety of mechanisms. Overall, the status of native salmonids in Rock Creek is threatened based on current conditions and trends of physical attributes, and the effects of the presence and current management of exotic species.

BASIN/SUB-UNIT Summaries **by: B.Riggers**
date:2/18/98

Sub-unit name and HUC #: North Rock -- 17010202130 060, 080, 090, 100

Major drainages include: Brewster, Babcock, Spring, Solomon, Gilbert and main Rock Creek
Size:
%BLM: 0
%FS: 80
%Private: 20
MA summary: Primarily 16 (timber suitable), 17 (steep timber suitable), 18 (winter range, timber suitable), and 19 (winter range, timber unsuitable). About 15% in the southwest portion of the sub-unit is in MA 12 (wilderness). Streamside areas are default MA 13 (riparian). There is no designated MA 14 (riparian grazing).

Issue : The effects of past timber harvest and road construction. The effects of developed and dispersed recreation. The effects of introduced salmonids (eastern brook, rainbow, and brown trout). The effects of private land management (ponds, small ag., corporate timber, sub-development).

Historical//reference condition

ICRBEMP or UCRB validation --(GIS layer or data finding): Historically, Rock Creek was a significant westslope cutthroat and bull trout drainage in western Montana and the upper Columbia River basin. Rainbow, brown, and brook trout were not present in Rock Creek or any other part of the Clark Fork River. Rock Creek probably functioned as both a recruitment source for fluvial forms of westslope cutthroat and bull trout in the Clark Fork River and maintained both fluvial and resident populations within the drainage. Connection between Rock Creek and the Clark Fork River was severed by construction of Milltown dam in the 1907. Mining/smelting activities in the Clark Fork basin upstream of Rock Creek, which began in the late 1800's, added to the impacts, eventually resulting in extirpation of bull trout populations in the mainstem and fragmentation of other sub-populations, further isolating populations in Rock Creek. Past stocking of rainbow, brook, brown, and yellowstone cutthroat trout resulted in increased competition and hybridization with native species, but the level of hybridization is largely unknown.

Relative to the North Rock area, fluvial and resident forms of westslope cutthroat and bull trout were historically present throughout the subunit. Large, migratory fish from the Clark Fork River ascended Rock Creek and its tributaries to spawn. Gilbert, Brewster, and the lower reaches of Spring Creek were probably important spawning and rearing areas for fluvial forms of both species. Resident forms likely occupied these same streams, as well as some of the smaller streams such as Babcock Creek, Solomon Creek, and Kitchen Gulch. Resident westslope cutthroat likely inhabited these smaller streams further up into the watershed than did bull trout, and probably also inhabited most perrenial flowing waters in the sub-unit.