1. **Species:** Rio Grande Sucker (*Catostomus plebeius*)

2. **Status:** Table 1 summarizes the current status of this species or subspecies by various ranking entity and defines the meaning of the status.

Table 1. Current status of *Catostomus plebeius*

Entity	Status	Status Definition
NatureServe	G3G4 (G3)	*Species is Vulnerable* At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
CNHP	S1	*Species is Critically Imperiled* At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
Colorado State List Status	State Endangered	Included in the Colorado list of threatened and endangered species
USDA Forest Service	R2 Sensitive	R2 Regional Forester's Sensitive Species
USDI FWS[b]	None	N/A

[a] Colorado Natural Heritage Program.
[b] US Department of Interior Fish and Wildlife Service.

The 2012 U.S. Forest Service Planning Rule defines Species of Conservation Concern (SCC) as "a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area" (36 CFR 219.9). This overview was developed to summarize information relating to this species' consideration to be listed as a SCC on the Rio Grande National Forest, and to aid in the development of plan components and monitoring objectives.

3. Taxonomy

Genus/species *Catostomus plebeius* is accepted as valid (ITIS 2015).

4. Distribution, abundance, and population trend on the planning unit [12.53.2,3,4]:

The Rio Grande sucker is endemic to the Rio Grande Basin. Historically, it was common throughout the Rio Grande and associated tributaries. The current distribution of this species includes two states (New Mexico and Colorado) and several locations in Mexico (Sublette et al. 1990, Calamusso 1996, Hendrickson et al. 1980, all cited in Rees and Miller 2005).

The distribution and abundance of Rio Grande suckers have been substantially reduced from historic levels in Colorado. Historical records suggest that this species was abundant and distribution included small tributaries and large rivers. Extensive sampling in 1994 indicated the Hot Creek population as the last known population of Rio Grande suckers in Colorado (Swift 1996 cited in Rees and Miller 2005).

Since 1995, Rio Grande suckers have been re-introduced and known to occur in several streams within the planning area (Table 2); however, successful reproduction has only been confirmed in North Canero and Middle Canero populations (Swift-Miller personal communication 2003 cited in Rees and Miller 2005, CPW no date). In addition, sampling in San Francisco Creek in 2004 yielded no individuals.

Table 2. Locations of Known Rio Grande Sucker Occurrences within the Planning Area

RGNF Ranger District	Location
Saguache RD:	Middle Fork Carnero Creek
	North Fork Carnero Creek
	South Fork Carnero Creek
	Big Springs
Conejos Peak RD:	Cascade Creek
	Osier Creek
	Hot Creek
	Lake Fork, Conejos
Divide RD:	San Francisco Creek

5. Brief description of natural history and key ecological functions [basis for other 12.53 components]:

The Rio Grande sucker is an obligate riverine species (Calamusso et al. 2002). Specific life history events, diel movement, or seasonal changes probably influence habitat associations, but this information is generally lacking. White (1972) found young-of-the-year (YOY) Rio Grande suckers using relatively low velocity (specific velocity not provided) stream margins. In a survey of several New Mexico streams, Calamusso (1996) found that this species preferred pool and glide habitat, but suggested that riffles may be ecologically important at certain times. Swift-Miller et al. (1999a) captured Rio Grande sucker in all major habitat types (i.e., pools, riffles, glides) in Hot Creek, Colorado.

Calamusso (1996) found that adult Rio Grande suckers within the Carson and Santa Fe national forests of New Mexico preferred low gradient habitats with cobble and small boulder substrate (2.5 to 19.7 inches). Velocity was usually less than 0.7 ft. per second but could be as high as 3.7 ft. per second). Preferred depth ranged from 3.9 to 15.7 inches.

Diet consists of periphyton (algae) and benthic macroinvertebrates that are scraped from rocks, gravel, or boulders (Sublette et al. 1990, Zuckerman and Langlois 1990, cited in Rees and Miller 2005). Swift-Miller et al. (1999b) reported that periphyton was the dominant food item in gut contents obtained from one location in Colorado and 12 locations in New Mexico.

6. **Overview of ecological conditions for recovery, conservation, and viability [12.53 7, 9?, 10, 11, 12]**:

The Rio Grande sucker is particularly vulnerable to reduced stream flows and increased sediment loads. Considerations for conservation elements should include protection of riparian areas, minimization of sediment input due to anthropogenic causes (e.g., road building, timber harvest), and management of non-native fish species (Rees and Miller 2005).

Implementation of management strategies should be designed to restrain further expansion of non-native fish distribution on National Forest System lands. These strategies should include strict enforcement of existing prohibitions regarding the release of non-native fish. Programs for the eradication of non-native fish in streams and within the historical range of Rio Grande sucker may also be considered (Rees and Miller 2005).

The preservation or restoration of stream flows that are adequate to maintain complex habitat, interconnectivity of habitats (longitudinally and laterally onto the floodplain) and instream cover should be a focal point of management policy or strategy. Conservation elements should address the function of the entire aquatic and riparian ecosystem, with particular attention to downstream populations (Rees and Miller 2005).

6. Threats and Risk Factors

Habitat loss and habitat degradation due to land and water use practices are prime threats to Rio Grande sucker populations. This species is particularly vulnerable to reduced stream flows and increased sediment loads.

Native fish communities in the Rio Grande Basin have been greatly reduced as a result of human activities during the last 100 years. These mechanisms can be separated into two general categories: 1) habitat degradation that includes habitat loss, modification, and/or fragmentation and 2) interactions with non-native species (Rees and Miller 2005).

Habitat loss typically occurs when streams are dewatered due to water use practices. Habitat fragmentation is often a result of dewatering, but it can also be caused by the creation of barriers to fish passage such as dams and diversions. Habitat modification includes not only aspects discussed under fragmentation and loss, but also includes modification of stream channels due to channelization, scouring, or sedimentation; changes in temperature and flow regimes; and alterations to water chemistry related to pollution. Land use practices that can impact stream channels include construction of roads through highly erodible soils, improper timber harvest practices, irrigation, and overgrazing in riparian areas (Rees and Miller 2005).

The effect of fire has little direct impact on the quality of Rio Grande sucker habitat, but post-fire conditions can effect downstream populations. During storm events on recently burned areas, large quantities of sediment are frequently loaded into streams. Once in the watershed, the increased sediment load can cover substrate, decrease pool depth, diminish suitable spawning habitat, and reduce fitness by decreasing the nutritional value of the food base (Rees and Miller 2005).

Competition with and predation by non-native species are extensive threats to the health and viability of Rio Grande sucker populations. Non-native predators include northern pike and brown trout. The introduced white sucker tends to be well-adapted to a variety of degraded environmental conditions, allowing it a competitive advantage on a spatial or temporal scale over the Rio Grande sucker. The larger white sucker competes with Rio Grande sucker for available food sources and also has the ability to hybridize with Rio Grande sucker (Rees and Miller 2005).

In addition, activities including water development, road construction, timber harvest and grazing of riparian areas are likely to continue to impact Rio Grande sucker suitable or potential habitat in the future (Rees and Miller 2005).

7. Key literature:

Colorado Parks and Wildlife (CPW). No date. J. Alves, preparer. Rio Grande sucker, fact sheet. Unpublished report. 7 pp.

Calamusso, R. and J.N. Rinne. 1996. Distribution of Rio Grande cutthroat trout and its co-occurrence with the Rio Grande sucker and Rio Grande chub on the Carson and Santa Fe National Forests. Pages 157-167 in D.W. Shaw and D.M. Finch, technical coordinators. Desired future conditions for southwestern riparian ecosystems: bringing interests and concerns together. Calamusso, R., J.N. Rinne, and P.R. Turner. 2002. Distribution and abundance of the Rio Grande sucker in the Carson and Santa Fe National Forests, New Mexico. The Southwestern Naturalist 47(2):182-186.

Hendrickson, D.A., W.L. Minckley, R.R. Miller, D.J. Siebert, and P.H. Minckley. 1980. Fishes of the Rio Yaqui basin, Mexico and United States. Journal of the Arizona-Nevada Academy of Science 15:65-106.

Rees, D.E. and W.J. Miller. 2005. Rio Grande Sucker (*Catostomus plebeius*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: http://www.fs.fed.us/r2/projects/scp/assessments/riograndesucker.pdf [07/06/2015].

Swift-Miller, S.M., B.M. Johnson, R.T. Muth, and D. Langlois. 1999a. Distribution, abundance, and habitat use of Rio Grande sucker (*Catostomus plebeius*) in Hot Creek, Colorado. Southwestern Naturalist 44(1): 42-48.

Swift-Miller, S.M., B.M. Johnson and R.T. Muth. 1999b. Factors affecting the diet and abundance of northern populations of Rio Grande sucker (*Catastomus plebeius*). Southwestern Naturalist 44(2): 148-156.

USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. General Technical Report RM-GTR-272.