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STREAM: Deer Creek

DRAINAGE: West Fork Jarbidge River

STATE WATER CODE: 1126

GAWS COMPUTER NO.: 170501,05,155,035,040

SURVEY DATES: June 22, 23, 24, 25 and July 1, 1992

REPORT DATE: March 11, 1993

WRITTEN BY: Gary Lee Johnson

SURVEY METHODOLOGY: The U.S. Forest Service Region 4, Level III Fisheries Habitat Survey Method (March, 1989) was utilized at seven Sample Sites (SS) spread somewhat equidistant throughout the U.S. Forest portion of stream. Each SS was preplotted on the U.S. Geological Survey 7.5 min. topographic maps of the area.

The first 100 ft. at each SS was sampled for fish using a one-pass effort with a Dirigo backpack electroshocker. Stunned fish were netted and held for fork length (mm) and weight (gm) measurement and general body condition assessment prior to their return to the stream. Fish seen escaping capture were recorded as misses and used in fish density estimate calculations. Aquatic macroinvertebrate types and relative abundance were assessed following random stream and substrate inspection at each SS. Habitat transects were placed 50 ft. apart. Stream discharge was calculated at SS's (excluding SS2-1) using timed float, velocity estimates and water width and depth measurements over a 0.6-1.5 m length of uniform stream.

LAND OWNERSHIP AND ACCESS: The majority of the Deer Creek drainage lies within the Jarbidge District of the Humboldt National Forest. The lower 1.9 mi. of unsurveyed stream traverse both private and public lands administered by the Bureau of Land Management. The town of Jarbidge is located about 4 mi. South of the confluence of Deer Creek and the West Fork Jarbidge River. The main access to Deer Creek is from the Diamond A Desert located 6.0 mi. North of Jarbidge via the Deer Creek Grade that traverses the West rim of Jarbidge Canyon. At the East edge of the Diamond A Desert the access to upper Deer Creek parallels the West rim of Deer Creek canyon for a distance of 5.3 mi. at which point a 4-wheel drive road crosses the Deer Creek drainage. The 4-wheel drive outlet road forks with one 1.8 mi. route to Jarbidge and a 5.0 mi. southerly route over Deer Mountain to Bear Creek Summit located 9.3 mi. from Jarbidge. Access along Deer Creek is limited to foot or horse traffic only.

WATERSHED DESCRIPTION: The Forest portion of Deer Creek is a northerly flowing second order stream with two headwater side tributaries located in the Jarbidge Mountain area. The 4.4 mi.

length of Forest portion of stream lies within a 5.0 sq. mi. drainage basin that ranges in elevation from 8977 ft. atop Deer Mountain to 6480 ft. at the Forest Boundary. Where Deer Creek enters the West Fork Jarbidge River the elevation is about 5760 ft. The majority of Deer Creek runs through a moderate to steep V-shaped valley that averages 86 ft. wide below the tributary confluence to the Forest Boundary. The valley form at SS2-4 was more open and trough-like with a mean width of 197 ft. The uppermost SS was situated in a narrow V-shaped, steep-sided area. The surveyed tributary valley form was moderate V-shaped with a bottom ranging from 92 ft. at SS3-1 to 9 ft. at SS3-2.

Upland vegetation above the lower three SS was composed primarily of a mountain shrub and aspen overstory. Fir replaced aspen as a dominant overstory at upper elevation SS's except, at SS3-1 near the mouth of the tributary where mahogany trees were dominant above the valleybottom. Forbs appeared to dominate grass in the upland understory. Valley side-slpes appeared stable despite there being some steep terrain. The geology of the area is upper volcanic rocks (Million Scale Geologic Map of Nevada, 1977).

WATER STATUS: Deer Creek was a gaining stream that went from 0.28 cfs to 0.81 cfs. The surveyed tributary had a mean discharge of 0.19 cfs. The tributary below SS2-5 contributed may have contributed about as much flow as was measured at SS2-5. Stream flow was described as being "low" at all SS's. The May 1, 1992 Snake River Basin snow measurement average was only 26% of normal. Bear Creek Meadow snow measurement showed the site was without snow whereas, there was snow at the site in six previous dry years.

Stream temperature ranged from a morning low reading of 44°F to an afternoon high reading of 67°F. The stream was described as clear throughout and fast at all but two SS's. The stream Ph was 7.5, alkalinity was 51.4 ppm and hardness was <17.1 ppm at SS2-3 on June 24, 1992. The stream width to depth ratio averaged 42.7 (33.1-65.8) in the main stream and 35.0 in the tributary.

STREAM HABITAT CONDITION INDEX (HCI): The overall, stream HCI was 65.8 percent of optimum or "fair" and 70.8 percent of optimum or "good" in the tributary. Individual HCI parameters rating in the "good" category included both soil and vegetation bank and stream-bottom. The lowest rated individual HCI parameter was pool structure wherein, the overall, mean rating was 47.2 percent of optimum. Similarly, the mean pool structure rating through fish sample areas was 39% of optimum.

STREAM CHANNEL TYPE AND STABILITY: The lower two SS's had a field determined stream gradient of 4.5% and a streambottom composed primarily of rubble and boulder at SS2-1 and rubble and gravel at SS2-2 hence, a Rosgen's A2 stream type. The middle two SS's and SS3-1 on the tributary had stream gradients of 2.5% to 3.0% and substrate dominated by gravel and rubble with lesser amounts of boulders and sand/silt. A B3 channel type best fits the aforementioned stream area. The upper SS in both the mainstem and

tributary had gradients of 6.5% and 9.0%, respectively. Gravel was dominant in both areas with lesser amounts of rubble and fine materials. These areas were classified as Rosgen A3 type channels.

Stream channel stability evaluations all rated "fair" with a drainage average score of 86. Positioned at the lower reach of the tributary, SS3-1 was considered the least stable SS wherein, streambank cuts and general instability were apparent probably as a function of being at the outwash of the tributary. A fair amount of streambank cutting was also present at SS2-4, the first SS downstream of the tributary.

RIPARIAN CONDITIONS: Mostly alder and some willow and aspen dominated riparian overstory vegetation at SS2-1. Willow and aspen were prominent as overstory at other SS's. Fir trees were present at all but the two lowest elevation sites. Understory plants included forbs, sedge and grass. Thistle was the dominant understory plant at SS2-4 as were sedges at tributary SS3-2. Most riparian zones scored in "good" condition and only SS2-3 and SS3-1 were in "fair" condition. Willow density was the lowest rated riparian criteria and density was lowest at SS2-3, SS2-5 and SS3-2. Streamside cover provided the water a mean canopy of 60% along the mainstem and 76.5% along the tributary.

HABITAT VULNERABILITY: The Index of Habitat Vulnerbility (HVI) to management activities was "low" at the two highest elevation SS's, "high" at SS2-3 and "moderate" at all other SS's. Streambank sensitivity ratings as determined from the combined stream channel stability scores for upperbank vegetative protection and lowerbank rock content averaged a score of 12.6 (9-18). A score of >13 indicates that one season of moderate livestock grazing can result in damaged streambanks. Poor to fair bank protection existed at SS3-1 hence, the high score of 18. Contrarily, the upper tributary SS was the most stable hence, the least sensitive. The mainstem had similar sensitivity ratings throughout and an average score of 12.2. No ungulate use in the drainage had occurred prior to the survey period and estimates of past streambank damage as evidenced by bank trampling were "light" throughout the surveyed area. Even the most sensitive SS located at SS3-1 only had a mean ungulate damage rating of 22.5%. Deer Creek drainage is in the East Unit of the Buck Creek C&H Allotment. Average undercut streambank frequency at habitat transect sites was 26% at habitat transect sites. Streambottom embeddedness ratings averaged 17.7% or "light" throughout the stream.

FISH POPULATION: Rainbow/redband trout were found at all SS's at densities ranging from 48.0 fish/mi. at SS2-5 to 880.0 fish/mi. at SS2-4. The mean fish density in the mainstem and tributary was 512.9 fish/mi. and 290.4 fish/mi., respectively. Trout are distributed over about 4.4 mi. of stream above the Forest Boundary and over the lower 0.8 mi. of the surveyed tributary. The upper limit of fish distribution was only limited by the availability of streamflow. The largest fish captured was 153 mm (FL) and the smallest fish was 54 mm. The average fork length of 49 measured

fish was 90 mm. All fish looked to be in "good" condition. Length frequency data indicates a minimum of four age-groups within the sample population. The mean length of each age-group was as follows: I-69 mm, II-98 mm, III-122 mm and IV-144 mm. Progeny from the 1992 spring spawning were not apparent in the stream suggesting they may not have emerged from the gravel before our pre-July survey period.

There is no previous recorded fish population survey or creel survey data on Deer Creek. The Department's 10% Angler Questionnaire Summary indicates that Deer Creek is very seldom fished by the public in fact, only one angler reported to have fished the stream during the period 1980 through 1989. No reported use occurred during the period 1970 through 1979.

AQUATIC FAUNA AND FLORA: Caddisflies and mayflies were found throughout at all SS's. Caddisflies were considered abundant in the mainstem where up to six types were differentiated. Mayfly larvae were commonly found in the mainstem and abundant in the tributary where five types were present. Stonefly larvae were seen at all but the lower two SS's as were planaria present at all but, the lower three SS's. Dipteran larvae were found at three mainstem SS's.

Aquatic plant coverage was minimal and included both clinging vegetation (algae and moss) and rooted vegetation (Redtop bentgrass, sedges, and rushes).

BEAVER STATUS: There were active beaver ponds downstream of SS2-2 and old aspen beaver cuttings at SS2-2. Aspen regeneration was stymied from ungulate browsing at and some recent beaver use at SS2-3. There was evidence of an old beaver dam washout at SS2-4. Beaver do not seem to be causing any problems in Deer Creek.

CONCLUSIONS

STREAM'S IMPORTANCE: Deer Creek supports a healthy wild trout population in a relatively remote area.

ISSUES AND CONCERNS: Ungulate browsing is preventing speedy recovery of past beaver impacted areas. A point source of fine sediment delivery to Deer Creek is located near the only stream crossing and is associated with what appears to be an abandoned steep road cut.

RECOMMENDATIONS: Livestock use should be made compatible with speedy recovery of beaver impacted areas and maintaining good stream conditions.

The bared area located near the road crossing should be stabilized through vegetative plantings.