

I. Project Title: Duchesne River Riffle Habitat Measurements

II. Principal Investigators:

Sam Finney
U.S. Fish and Wildlife Service
1380 South 2350 West
Vernal, UT 84078
Office (435) 789-0351 Fax (435) 789-4805
Email: sam_finney@fws.gov

Jay Groves
Northern Ute Tribe
P. O. Box 190
Duchesne, UT 84026
Office (435) 725-4816
Email: jayg@utetribe.com

III. Project Summary:

Recent base flow recommendations (Haines and Modde 2003) identified passage needs for endangered fish in the Duchesne River. The goal of these recommendations was to establish Colorado pikeminnow usage of the Duchesne River at historical numbers. Flows are needed to provide ample water for passage, productivity, and habitat requirements of Colorado pikeminnow. Haines and Modde (2003) showed a discharge of 115 CFS preserves most riffle habitat and provides fish passage. Base flow model predictions (noted in the Haines and Modde report as imprecise extrapolations) were ground truthed in 2006 (Finney 2006). The report noted, however, that the hydraulic control was not always the shallowest point in the riffle. The objective of this project is to measure wetted widths and depths (including max depth) at various cross sections within the seven riffles measured in 2006 and compare these from a Colorado pikeminnow passage standpoint.

IV. Study Schedule

- a. Initial year: FY07
- b. Final year: FY07

V. Relationship to RIPRAP

Green River Action Plan: Duchesne River

I.G. Evaluate and revise as needed, flow regimes to benefit endangered fish populations

VI. Accomplishments of FY07 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings.

River profile data were taken at the seven locations sampled by Finney (2006) by measuring wetted width and four depths along the wetted width axis (including finding max depth; Table 1). Our “weakest link” theory states that passage depth required, in this case 30cm, is only valid if that depth is available throughout the riffle and not just at the hydraulic control point. This being

Table 1. Discharge for thalweg depth of 0.3m, Duchesne River 2006 (from Finney 2006) and measured maximum depths and discharge (Randlett Guage) at the same riffles in 2007.

Cross Section (2006)	Discharge (2006)	Maximum Depth (2007)	Discharge (2007)
1	6	49	85
2	28	20	80
3	25	48	80
4	29	44	80
5	>300	18	80
6	40	38	80
7	30	38	80

Table 2. Cross sectional depths measured, including max depth (in red) at the seven cross sections measured in 2007.

Profile #	Date	Wet Wid. (m)	Surf Dept (cm)	Surf Dept (cm)	Surf Dept (cm)	Surf Dept (cm)	CFS
1	8/27/2007	23.59	14	12	23	26	85
1	8/27/2007	18.37	33	37	49	47	85
1	8/27/2007	22.68	40	43	38	26	85
1	8/27/2007	31.04	49	45	30	24	85
2	9/25/2007	57.14	14	13	15	17	80
2	9/25/2007	57.14	15	15	14	15	80
2	9/25/2007	57.14	13	15	17	14	80
2	9/25/2007	57.14	12	12	20	13	80
3	9/25/2007	40.02	26	34	48	39	80
3	9/25/2007	40.57	17	22	26	24	80
3	9/25/2007	35.14	31	29	40	25	80
3	9/25/2007	27.59	28	19	21	29	80
4	9/25/2007	58.46	32	16	18	28	80
4	9/25/2007	10.30	20	26	18	10	80
4	9/25/2007	13.18	20	38	36	44	80
4	9/25/2007	19.14	36	36	24	18	80
5	9/25/2007	70.99	10	10	11	5	80
5	9/25/2007	70.99	12	14	16	9	80
5	9/25/2007	70.99	18	16	6	14	80
5	9/25/2007	70.99	5	13	9	16	80
6	9/25/2007	55.40	29	33	36	38	80
6	9/25/2007	55.08	10	20	28	20	80
6	9/25/2007	42.73	27	32	29	21	80
6	9/25/2007	35.32	10	17	20	24	80
7	9/25/2007	34.10	35	29	36	32	80
7	9/25/2007	26.1	29	32	38	34	80
7	9/25/2007	19.00	35	24	27	27	80
7	9/25/2007	19.17	28	38	32	26	80