

Trip Report: Eagle Creek, Arizona

15-17 June 2009

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Summary

Fish surveys were conducted on portions of Eagle Creek, Greenlee County, Arizona, during 15-17 June 2009 to determine species composition, distribution, and relative abundance. Survey methods included backpack electroshocking, seining, dip netting, gill netting, and hook and line. A total of 1,315 individuals were contacted, representing five native and eight non-native species. With the exception of one desert sucker which was captured downstream of the Freeport-McMoRan water diversion dam, non-native fishes were contacted exclusively at all downstream sites, while native species predominated sites upstream of the dam.

Methods

Surveys were conducted at eight localities on Eagle Creek between Honeymoon (HM; elev. = 1,650 m) in the upper portion of the watershed, and Bat Cave (elev. = 1,036 m), approximately 12 km upstream from Eagle Creek's confluence with the Gila River (Fig. 1). Survey locations included HM (12S 641111, 3704989), 1st Crossing below HM (12S 640444, 3701320), 2nd Crossing below HM (12S 640636, 3697789), Sheep Wash (12S 640707, 3686663), Above Freeport McMoRan (FM) Dam (12S 643380, 3661181), Below FM Dam (12S 645252, 3659588), Graves (12S 646449, 3656592), and Bat Cave (12S 647611, 3655046). Surveys were conducted using a Smith-Root backpack shocker (SR 12-B), seines (1.2 x 1.2 and 3.7 x 1.2 m; 3 mm mesh), dip nets, experimental gill nets (38.1 x 1.8 m; square mesh size ranged from 13 to 51 mm), and hook and line. All available habitats were sampled (riffle, run, pool, and isolated backwaters). Seines were pulled up- or downstream through the water or fixed in position and used to capture fish displaced downstream by electrofishing or by mechanically disturbing the substrate. Two experimental gill nets were fished overnight in the deep pool (> 2 m) located immediately downstream of the FM dam. All fish were identified to species, counted, and released near the capture site.

Results and Discussion

A total of 1,315 individuals representing five native and eight non-native fish species were collected (Table 1). Native fishes comprised three of the four most common species captured. Speckled dace *Rhinichthys osculus* was the most abundant species captured (26% of total catch). Second most abundant was longfin dace *Agosia chrysogaster* (23%), followed by red shiner *Cyprinella lutrensis* (18%), desert sucker *Pantosteus clarki* (12%), green sunfish *Lepomis cyanellus* (8%), and Sonora sucker *Catostomus insignis* (6%). Other species each comprised less than five percent of total catch. Native fishes collectively comprised 97% of the total catch upstream of the FM dam. With the exception of one desert sucker collected at Graves (downstream of the FM dam), no other native fish species was found downstream of the dam. Ten fish species (five native, five non-native) were found upstream the FM dam while nine fish species (one native, eight non-native) were found downstream the structure.

The absence of Gila chub *Gila intermedia* in our collections at Honeymoon during 2009 (and previously in 2008) lies in marked contrast to the past 20+ years of collections when at least one chub was captured at this locale. Non-native rainbow trout *Oncorhynchus mykiss* were again absent from our surveys, though their persistence in Eagle Creek relies primarily on stocking. Of particular interest was the collection of a single desert sucker at the Graves site because no native fishes have

been documented in our collections downstream from the FM water diversion dam since 2001. Non-native northern crayfish *Orconectes virilis* were present in high densities at all survey locations. Minimal beaver activity was noted at all our survey sites during 2009.

Eagle Creek is perennial in its upper watershed, but becomes intermittent along a 10 km reach upstream of Willow Creek (Fig. 1). Willow Creek receives water via an interbasin transfer from the Black River (Salt River basin) and subsequently recharges the surface flow in Eagle Creek. During our 2009 survey, maximum discharge recorded at the USGS stream gauge located upstream of the FM dam averaged 0.4 m³/s (<http://waterdata.usgs.gov/nwis/uv?09447000>). Downstream from the dam Eagle Creek again becomes an intermittent stream until its confluence with the Gila River.

Acknowledgements

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Species	Honeymoon Camp (HM)	1st Crossing Below HM	2nd Crossing Below HM	Sheep Wash	Above FM Dam	Below FM Dam	Graves	Bat Cave	Catch Totals	Percent Total
Desert sucker*	10	6	3	135	6		1		161	12.2
Sonora sucker*	8	3	7	21	41				80	6.1
Green sunfish					11	32	45	21	109	8.3
Smallmouth bass					10	11	2	1	24	1.8
Common carp					2	1			3	0.2
Gila chub*				20					20	1.5
Longfin dace*	84	147	46	16	3				296	22.5
Red shiner							80	159	239	18.2
Speckled dace*	128	161	43	4					336	25.6
Channel catfish					1	13	7	1	22	1.7
Flathead catfish							1		1	0.1
Yellow bullhead					8	7	3	5	23	1.7
Mosquitofish							1		1	0.1
Total fish	230	317	99	196	82	64	140	187	1315	100.0

Table 1. Fishes captured from Eagle Creek, Arizona, 15-17 June 2009. Data represent number of individuals for each species, total number and proportion for each species across sites, and total catch for each site for all methods combined. Native species are indicated by asterisk (*).

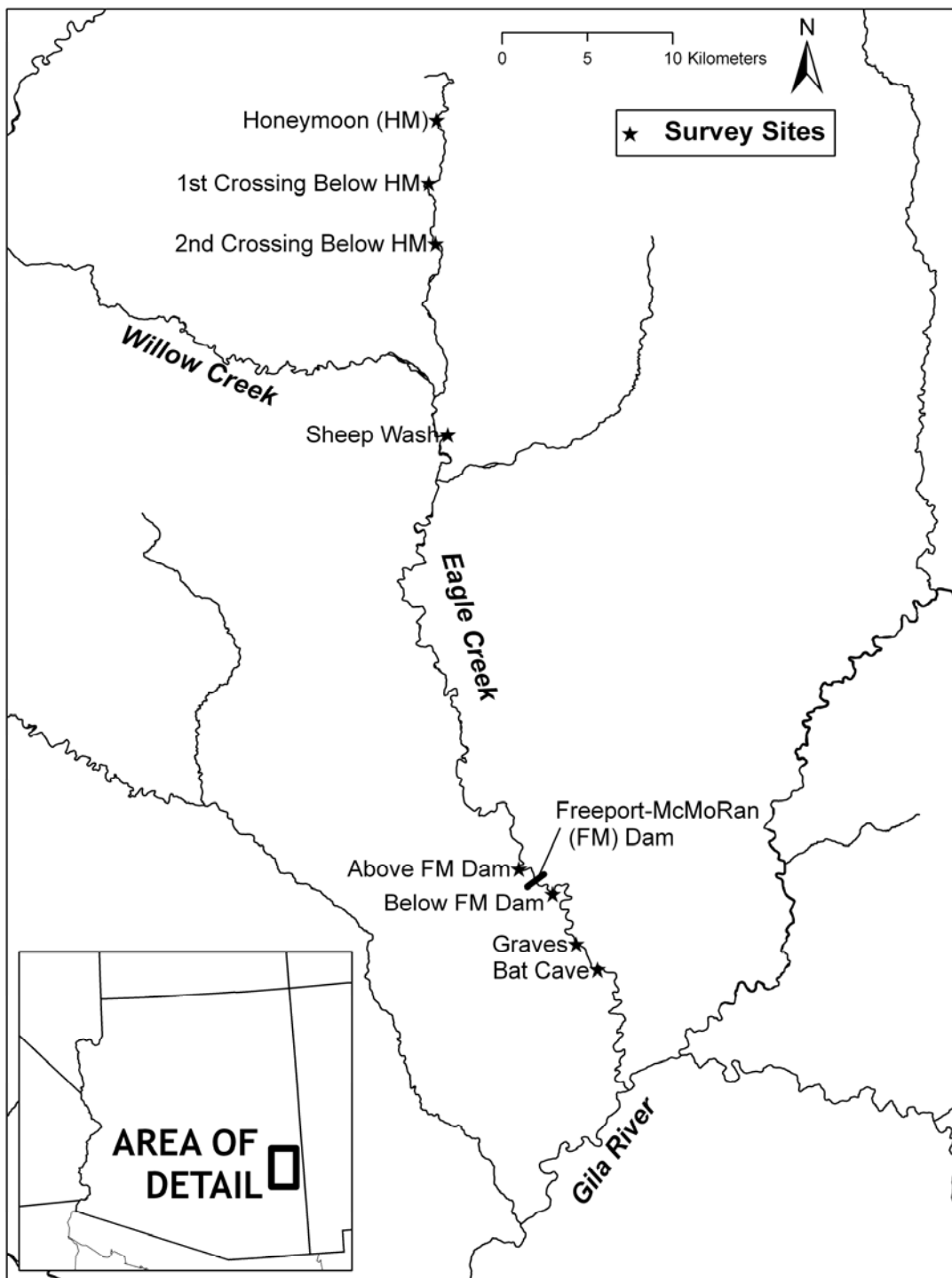


Figure 1. Sketch map of Eagle Creek, Arizona showing locations of the eight survey sites that were visited 15-17 June 2009.