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SURVEY OF FISH, INVERTEBRATES AND ALGAE IN
SALT WASH, ARCHES NATIONAL PARK

PR-27-1

BIO/WEST, Inc.

Aquatic and Terrestrial
Resource Management and Problem Solving



SURVEY OF FISH, INVERTEBRATES AND ALGAE IN
SALT WASH, ARCHES NATIONAL PARK

PR-27-1

Submitted to

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INTRODUCTION

Arches National Park was established on November 12, 1971, to protect and preserve an area of natural stone arches, windows, spires, and pinnacles in southeastern Utah. Most of the area is hot desert and only one perennial stream, Salt Wash, is found in the Park. The stream emanates from springs and flows intermittently for approximately 5 miles through the Park until it enters the Colorado River about 4 miles above Moab, Utah. Salt Wash has been known to contain fish for many years but the fish have never been identified. On October 6 and 7, 1979, BIO/WEST personnel collected fishes, benthic invertebrates, algal samples, and basic water chemistry data from three locations on Salt Wash and one site in Freshwater Canyon, a tributary to Salt Wash. This report presents the results of that survey.

STUDY AREA

Four stations on Salt Wash and its tributaries were sampled:

1) Salt Wash from its mouth to Wall Spring, about 2.5 miles; 2) the Salt Spring outflow; 3) Salt Wash from the footbridge at Wolfe Ranch to the mouth of Freshwater Canyon; and 4) a plunge pool in Freshwater Canyon (Figure 1).

The lower station on Salt Wash is supplied with a small but continuous flow by a series of springs. The stream bed consists of sandstone bedrock, sand and small areas of gravel. Pools are infrequent and aquatic vegetation is limited. Salt precipitate along stream banks is common.

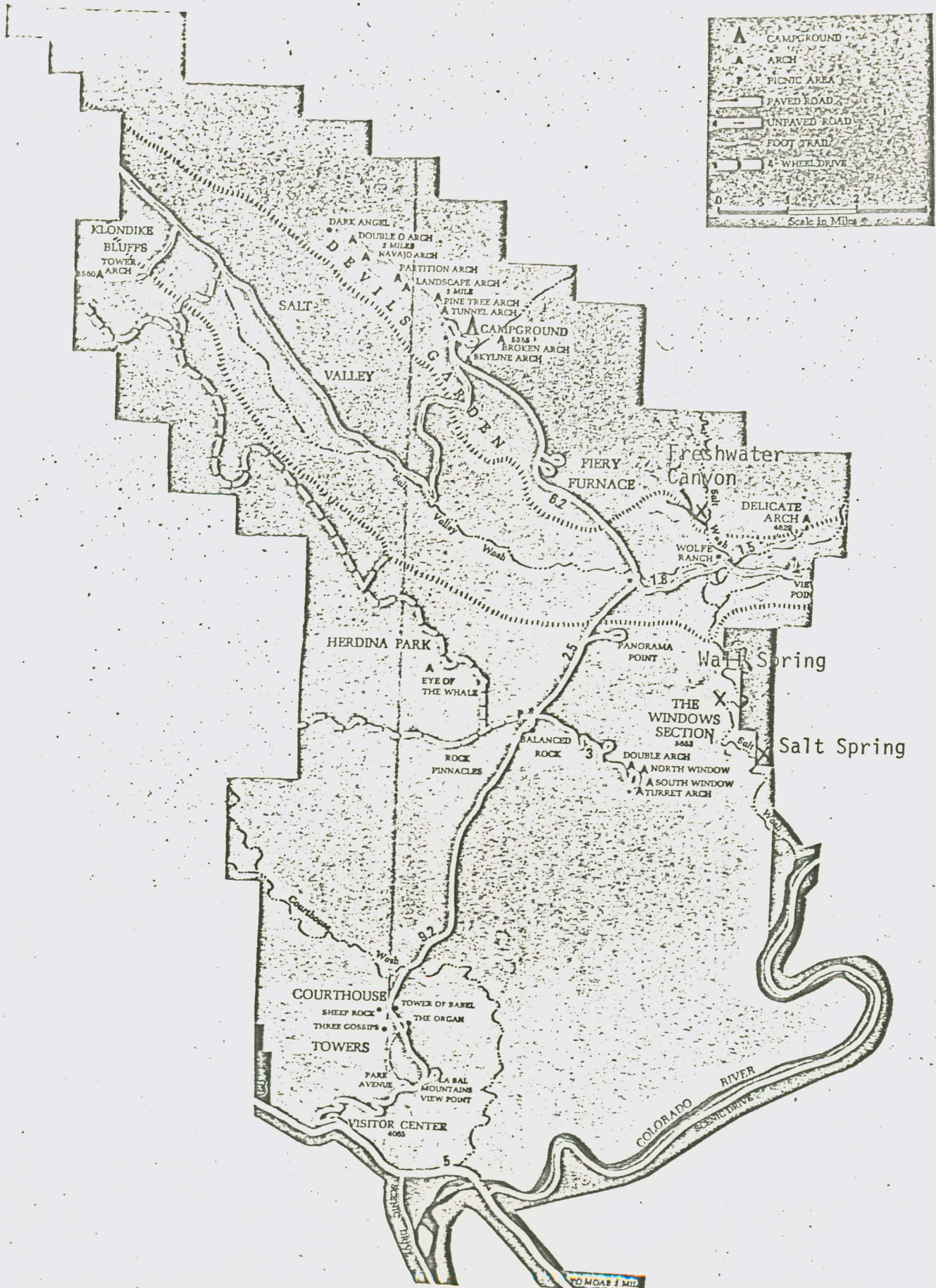


Figure 1. Map of Arches National Park showing aquatic biology sampling sites on Salt Wash.

Salt Spring forms a very small stream of approximately 100 yards in length before it joins Salt Wash. Small, stagnant pools filled with aquatic vegetation are found along the stream.

Salt Wash from Wolfe Ranch to Freshwater Canyon has deep, silty pools filled with aquatic vegetation. The water in the pools was murky when collections were made.

Freshwater Canyon is a spring fed series of plunge pools formed in the sandstone bedrock. Only the lowermost pool supported fish and the stream between that pool and Salt Wash was filled with dense emergent vegetation.

RESULTS

Water Quality

Table 1 shows water quality parameters measured at the four stations. All areas except Freshwater Canyon were very saline. Oxygen was abundant except in Salt Spring. Temperatures varied but were probably due primarily to changes in air temperature during different times of the day.

Fishes

Table 2 indicates the species of fish collected at each station. Four species, speckled dace (Rhinichthys osculus), fathead minnow (Pimephales promelas), flannelmouth sucker (Catostomus latipinnis), and plains killifish (Fundulus kansae) were collected in the system. The dace and sucker are native, the other two introduced. All 4 are found in the adjacent Colorado River.

Table 1. Water quality parameters for Salt Wash and Freshwater Canyon, Arches National Monument, October 6, 7, 1979.

Parameter	Lower Salt Wash	Salt Spring	Salt Wash at Wolfe Cabin		Freshwater Canyon	
			10-6-79	10-7-79	Lower Pool	Upper Pool
Dissolved oxygen (ppm)	7.9	4.4	9.4	-	8.8	-
pH	8.3	8.0	8.0	8.1	10.0	8.7
Salinity (ppt)	3.3	2.5	2.8	-	0.0	0.0
Conductivity (umhos/cm ²)	5000	3450	3850	-	350	255
Temperature (°C)	13	15	18	19	16	-

Table 2. Summary of fish species collected at 4 stations in the Salt Wash system in Arches National Park, October 6 and 7, 1979.

Species	Lower Salt Wash	Salt Spring	Wolfe Cabin	Freshwater Canyon
Speckled dace <u>Rhinichthys osculus</u>	X	X		
Fathead minnow <u>Pimephales promelas</u>	X		X	X
Flannelmouth sucker <u>Catostomus latipinnis</u>	X			
Plains killifish <u>Fundulus kansae</u>	X		X	

Lower Salt Wash contained all four species, with the killifish and dace being most abundant, whereas only one sucker was caught. Salt Spring contained only a few speckled dace. Salt Wash at Wolfe Ranch contained abundant fathead minnows and smaller numbers of killifish. The lower, deep (6 ft.) pool in Freshwater Canyon contained only fathead minnows.

Algae and Other Aquatic Plants

The algae Chara sp. (stonewort) is common throughout the Salt Wash system. It is a common species in ponds and slow-flowing streams where carbonates and bicarbonates are abundant (Fassett 1975).

Also present are the filamentous green algae Spirogyra sp. and Cladophora sp. which are concentrated at the Wall Spring sources. Both

of these genera are common and represented by a large number of different species. Intermixed with the filaments of these algae were a number of diatom species which were members of the order Pennales.

In the larger pools above Wolfe Ranch, narrowleaf pondweed (Potamogeton sp.) was collected.

Invertebrates

Qualitative invertebrate collections were made at each fish collection site. Invertebrate data are presented in Table 3. This information is preliminary and contains only the most obvious and abundant species encountered.

LITERATURE CITED

- Fassett, N. C. 1966. A manual of aquatic plants. Univ. Wisc. Press, Madison.

Table 3. Aquatic macroinvertebrates collected from four sites in Arches National Park, 1979 (X = Present).

Family	Location			
	Lower Salt Wash	Salt Spring	Upper Salt Wash	Freshwater Canyon
DIPTERA (flies)				
Tabanidae (horse flies)	-	-	-	X
Chironomidae (midges)	X	-	X	X
Simuliidae (blackflies)	X	-	-	-
Stratiomyidae (soldier flies)	X	-	-	-
Tipulidae (crane flies)	X	-	-	-
Pupae	-	-	X	X
Muscidae (house flies)	-	-	-	X
COLEOPTERA (beetles)				
Dytiscidae (predaceous diving beetles)	-	X	X	X
Hydrophilidae (water scavenger beetles)	-	X	X	X
TRICHOPTERA (caddisflies)				
Hydropsychidae	X			

Table 3. Continued

Family	Location			
	Lower Salt Wash	Salt Spring	Upper Salt Wash	Freshwater Canyon
ODONATA				
Coenagrionidae (damselflies)	X	-	X	X
Libellulidae (dragonflies)	X	X	X	X
HEMIPTERA (true bugs)				
Gelastocoridae (toad bugs)	-	X	X	-
Naucoridae (creeping water bugs)	-	X	X	-
Notonectidae (back swimmers)	-	X	-	X
Gerridae (water striders)	-	X	-	-
EPHEMEROPTERA (mayflies)				
Baetidae	X	-	-	X
HYDRACARINA (water mites)	X	-	-	-
OSTRACODA (seed shrimps)	-	X	X	-
GASTROPODA (snails)	-	-	X	-



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