

Moccasin Springs

Sampled 2013-2014

Site Information

Moccasin Springs emerges from west side of Black Water Creek in Seminole State Forest. The spring's flow was measured in 1997 and 2001 by the U.S. Geological Survey. The mean discharge was 0.29 cubic feet per second (cfs) putting it in category as a fourth magnitude. One vent was identified and sampled, but water flows from several sand boils according to the St. Johns River Water Management District. The pool measures approximately 40 feet long and 30 feet wide, and flows a short distance before discharging into Black Water Creek. The riparian zone consists of a normal, expected community of native plants, trees, and shrubs including cabbage palms, palmettos, and hardwoods. A primitive forest service campsite is situated next to the spring, but otherwise there is minimal evidence of human disturbance.

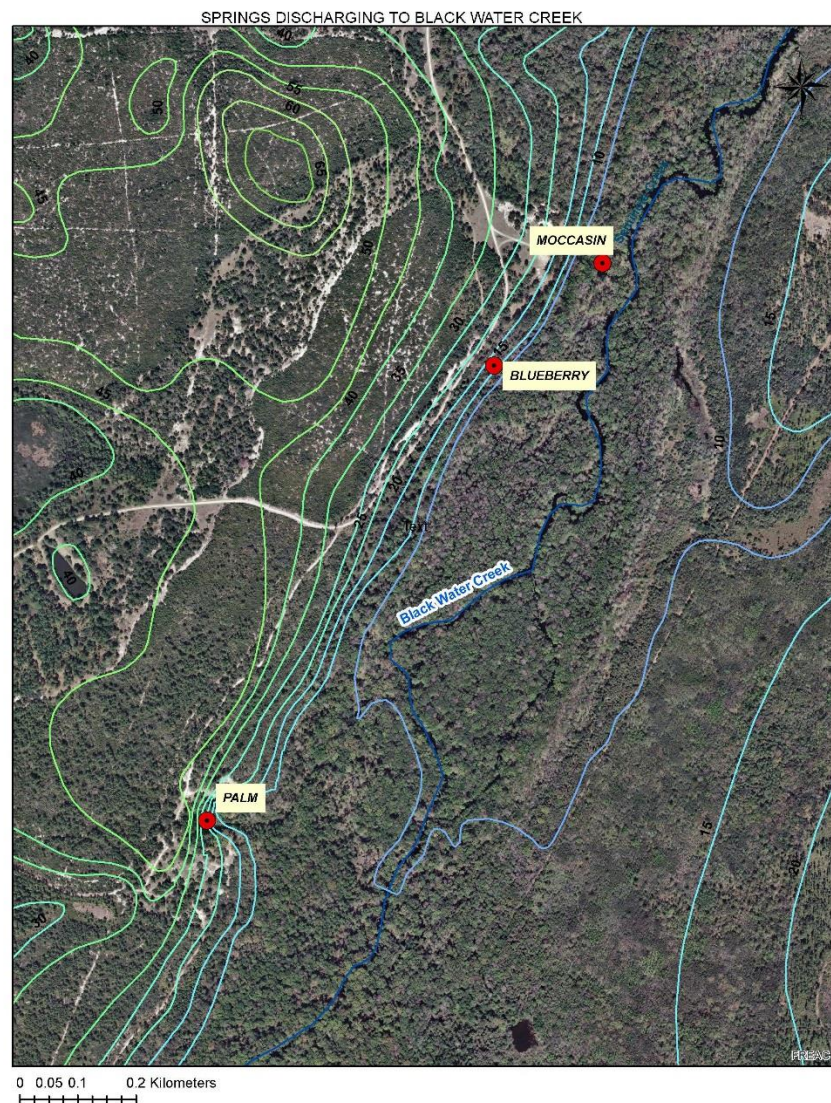


Figure 1-Mo. Location of Moccasin Springs in State Forest in Lake County

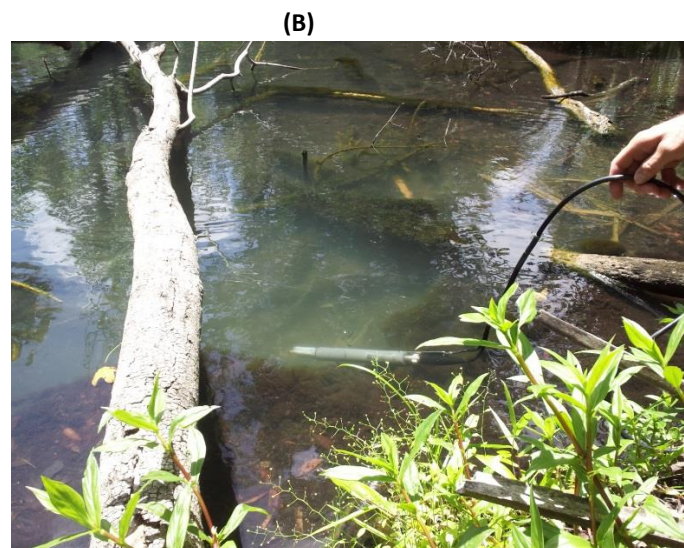


Figure 2-Mo. Moccasin Springs pool (A) and sample location/vent (B)

Results

Water Quality

Water quality was only sampled during two of the four sampling events due to water from Black Water Creek flooding the spring pool. The spring water has the highest conductivity reading out of all 11 springs sampled. Boron results were elevated but that is due to natural occurrence. The data suggest that human activities might have very slight impact on water source of the spring. There is not sufficient data to calculate annual geometric means for nitrate/nitrite for Moccasin Spring, however, both sample results indicate that NO_{3+2} limit is well within the springs water criteria rule 62-302.531(2)(b)2 which states: "For spring vents, the applicable numeric interpretation of the narrative nutrient criterion ...is 0.35 mg/L of nitrate/nitrite as an annual geometric mean, not to be exceeded more than once in any three calendar year period." All other nutrients were also low.

Table 1-Mo. Water Quality Results for Moccasin Springs

Date Sampled	7/18/2013	10/9/2013	1/21/2014	4/16/2014
pH	7.16		7.45	
DO mg/L	0.86		2.24	
DO %	11		28.4	
Specific Conductance (µmhos/cm)	2676		2687	
Water temperature (°C)	24.2		23.04	
Fecal Coliform (cfu/100mL)	10 B		2 U	
Enterococci (cfu/100mL)	n/a		n/a	
Turbidity (NTU)	0.45		0.3	
Alkalinity (mg CaCO ₃ /L)	113		116	
Chloride (mg Cl/L)	570		550	
Color true (PCU)	22		5.6 I	
Fluoride (mg/L)	0.29		0.28	
Sulfate (mg SO ₄ /L)	380		370	
TDS (mg/L)	1470		1450	
TSS (mg/L)	3 I		2 I	
Ammonia (mg N/L)	0.076		0.038	
Nitrite/Nitrate (mg N/L)	0.006 I		0.039	
Total Phosphorous (mg P/L)	0.037		0.033	
Total Kjeldahl Nitrogen (mg N/L)	0.38		0.19 I	
Organic Carbon (mg C/L)	4.6		1.2	
Ortho-phosphate (mg P/L)	0.027		0.023	
Sucralose (µg/L)	0.010 U		n/a	
Calcium (mg/L)	147		150	
Magnesium (mg/L)	55.3		54.8	
Potassium (mg/L)	10.1		10.1	
Sodium (mg/L)	322		n/a	
Boron (µg/L)	124		113	

B- Results based on colony counts outside the acceptable range

I- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

U - Indicates that the compound was analyzed for but not detected.

n/a - not collected or not reported due to data quality concerns

Habitat Assessment

The spring run was too short to perform a habitat assessment.

Aquatic Macroinvertebrate Community

Aquatic macroinvertebrates were not sampled.

Periphyton Survey

Periphyton was present in the spring pool and a sample was collected on January 21, 2014. The dominant taxon was *Cladophora* sp., which belongs to Class Chlorophyceae.

Other filamentous algae in the sample included *Oscillatoria* sp., *Lyngbya* sp. (Cyanophyceae), *Oedogonium* sp., *Rhizoclonium heiroglyphicum*, and *Ulothrix* sp. (Chlorophyceae).

Diatoms present in the sample included *Achnanthes* sp., *Nitzschia* sp., *Eunotia* sp., *Gomphonema* sp., and *Rhopalodia* sp.

Linear Vegetation Survey

The spring run was too short to perform a linear vegetation survey. Chara algae was present in the spring pool during some sampling events.

Summary

Moccasin Springs is a fourth magnitude spring located within Seminole State Forest. It is surrounded by primarily natural area with minimal human disturbance. The spring's discharge and water quality were fairly consistent between the two sampling events. Water quality meets surface water criteria specified in Chapter 62.302, F.A.C.