

Mineral Differentiation in The Lower Mountain Fork River

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Introduction

This study is focused on the Lower Mountain Fork River located in Broken Bow, Oklahoma. In the year 2006, this river found that it had naturally reproducing rainbow trout within its waters for the first time in history. Researchers are trying to find the reasons behind this change in the reproduction of the trout.

The object of this study is to see the different amounts of minerals located throughout the river. What are the main minerals that appear throughout the Lower Mountain Fork River?

Methods

Collection of Water Samples

- The water samples were collected in 50 mL vials
- 12 different sampled areas along the river

In the Lab

- Ran through the ICP-OES (Inductively Coupled Plasma- Optical Emission Spectrometry)
- 9 different minerals were sampled

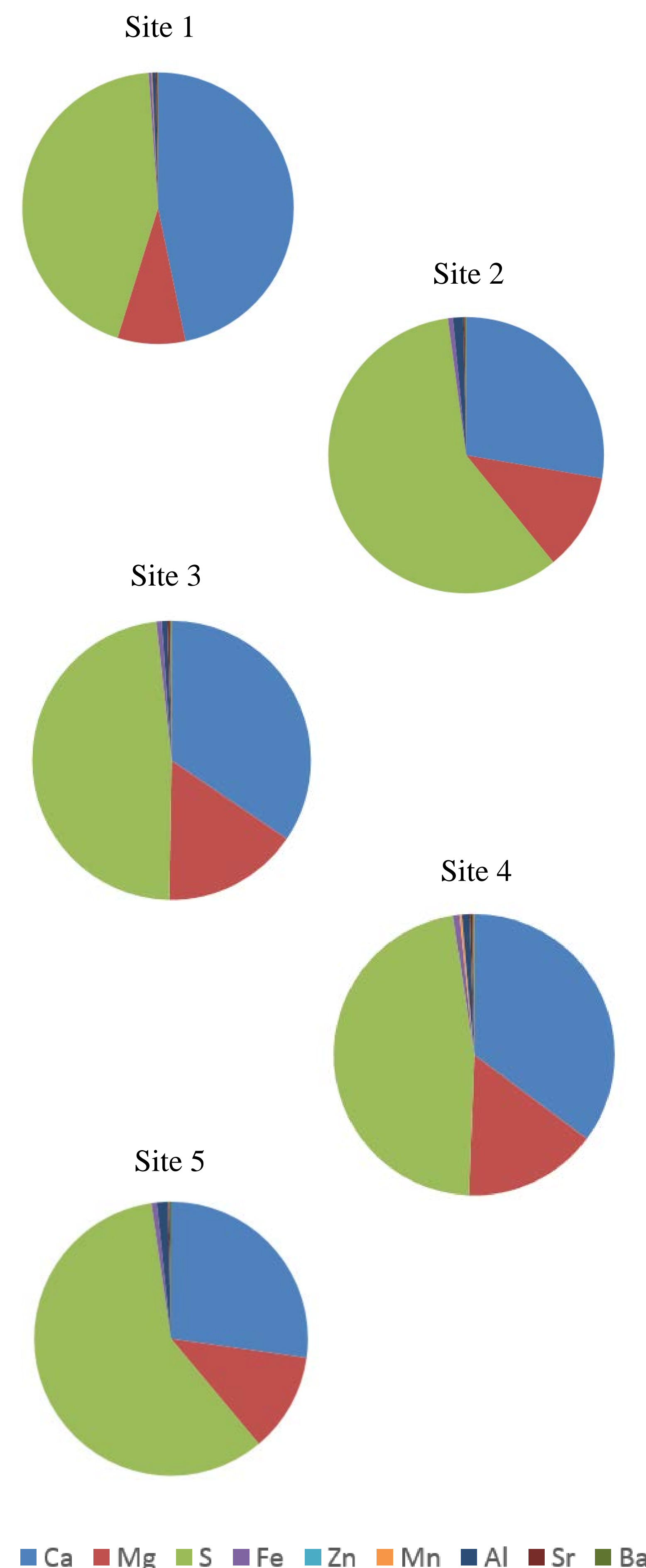


ICP-OES Machine

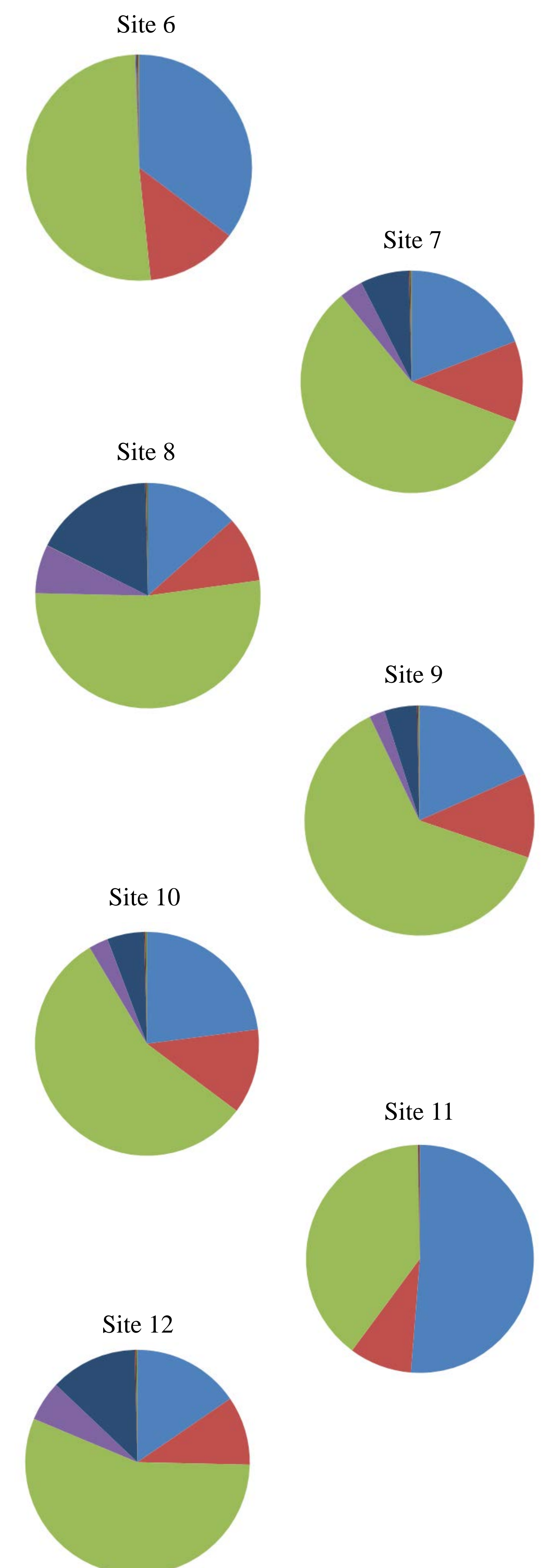
Results

Amounts of each mineral measured in ppm

Site Name	Date Collected	Ca	Mg	S	Fe	Zn	Mn	Al	Sr	Ba
1 Mt Fork above Lost Creek		12.703	2.197	11.972	0.090	0.001	0.022	0.114	0.053	0.021
2 Mt Fork @ Beaver Cr		3.083	1.270	6.544	0.066	< 0.001	< 0.000	0.132	0.020	0.018
3 Mt Fork @ Re-reg dam		2.184	0.999	3.037	0.039	< 0.001	< 0.000	0.041	0.019	0.012
4 Mt Fork @ Cooper Cr		2.282	0.998	3.047	0.047	< 0.001	< 0.000	0.019	0.058	0.019
5 Beaver Cr		2.907	1.251	6.281	0.069	< 0.001	< 0.000	0.138	0.019	0.020
6 Carnasaw Cr		4.326	1.604	6.259	0.014	< 0.001	0.002	0.015	0.021	0.021
7 Fish Fry Cr		1.968	1.211	6.011	0.352	< 0.001	< 0.000	0.732	0.020	0.022
8 No Name Cr		1.276	0.893	4.991	0.664	< 0.001	0.002	1.640	0.015	0.021
9 Horsepen Cr		1.713	1.105	5.841	0.203	< 0.001	< 0.000	0.430	0.016	0.015
10 Cooper Cr		2.532	1.357	6.209	0.308	< 0.001	0.001	0.591	0.019	0.025
11 Bee Branch	2/5/2015	23.208	4.022	17.902	0.010	< 0.001	< 0.000	0.020	0.097	0.015
12 Rough Branch	2/5/2015	1.256	0.805	4.548	0.468	< 0.001	< 0.000	1.019	0.015	0.017



Results



The Lower Mountain Fork River

Conclusions

- Three most prominent minerals: Ca, S, and Mg
- Zn and Mn were both negligible compared to the amounts of the other minerals
- Sites 7, 8, 9, 10, and 12 all have larger amounts of Al and Fe than the other sites listed
- Sites 1, 2, 3, 4, 5, 6, and 11 are in a similar grouping
- Sites 7, 8, 9, 10, and 12 are in a similar grouping

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