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| **Key Points / Questions** | **Reading Questions** |
| As you watch/read the assigned videos and readings, record any key terms, concepts, or ideas in the space below. Document any questions that arise as well. | 1. What are headwater streams? How are they formed?

Headwater streams are defined as where the source of water begins. They occur in the upper reaches of watersheds. They can form in the mountains in southern Appalachia from the collection of rainwater that runs off of the land. Streams accumulate as water proceeds downhill. |
| 1. As you watch the video entitled “Follow that Nutrient”, describe the pathways that nutrients can take.

Nutrients are added to streams through waste from organisms and from external sources such as leaves. Nutrients such as N, P, K, and Ca flow through the ecosystems. They can be found in the waste of organisms in which bacteria attach to. This is a food source for small insects that eat the waste. These insects can be eaten by fish. Fish will slough off scales and produce waste that is then consumed by other insects. Waste and nutrients flow downstream and fuel the explosion of phytoplankton. Phytoplankton are consumed by zooplankton such as *Daphnia*, which are prey for aquatic insects. Some of these insects transform into a terrestrial adult stage. When this occurs, nutrients are dispersed across the ecosystem, perhaps even back upstream. |
| 1. What species of fish are referred to as the “Salmon of the Southeast”? Why is this phrase used?

The smallmouth buffalo, a species of sucker. This species conducts a spawning run every year into the headwaters of the southern Appalachian Mountains. |
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| 1. What is the value of these spawning runs to headwater streams?

These fish provide nutrients into the streams and forests upstream from the rivers. The buffalo spawn every year so they are continually bringing nutrients upstream to the rivers and forests that surround them. |
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| **Summary/Reflections** |

Using the space below, summarize the appropriate reading IN YOUR OWN WORDS and reflect upon the significance of the findings. Each summary should consist of at least 150 words.

Provide a summary for the paper entitled “Salmon of the southeastern U.S.: Sucker migrations deliver resource subsidies to oligotrophic stream” by White et al. (2022).

Provide a summary for the paper entitled “Migratory redhorse suckers provide subsidies of nitrogen but not phosphorus to a spawning stream” by Hudson et al. (2023).