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viability of these reintroduction efforts. This study quantifies the variability of flow and documents the relationship between available unconsolidated deposits, and discharge variability. We measured discharge at thirteen sites, using standard methods, in order to sites showed decreased discharge in areas that contained a greater area of gravel bars, gravels in these sections of the creek. Low flow periods showed an overall increase in discharge from the gravels and a different relationship, likely related to individual aquifer protection in the regulation of baseflow. Without these gravel bars, the habitat would have fish species.

- bluehead suckers, speckled dace, and flannelmouth suckers that are native to the Colorado River(US NPS 2015).
- assessment were to:
- summer season
- the Colorado.

Location

Plateau

- environment (Whiting et. al. 2014).
- 13 sites along the Creek were chosen at 0.1 mile intervals.



Assessing hyporheic exchange in an arid, spring-fed stream system, Bright Angel Creek, Grand Canyon National Park, AZ BOX, Carolyn L., Northern Arizona University, 929 W Clay Ave #2, Flagstaff, AZ 86011, Email:clb488@nau.edu and TOBIN, Benjamin W., National Park Service, 1824 S Thompson St, Flagstaff, AZ 86001

Data

definitive cause and effect could be put together for these two variables. water seasonally after this preliminary assessment



and the surface area of the gravels found in that area. Discharge is denoted in red, and gravel surface area in bolded black with site names in underlined black.

- which serve as a natural reservoir.
- recharge
- these gravel deposits after the monsoon season

) Fetter, C.W., 2001, Applied hydrogeology: Upper Saddle River, N.J., Prentice Hall.) USGS 2014, Grand Canyon Stations GCMRC.

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Interpretations

Based on the data collected, the following patterns can be observed There is an increase in discharge at every site between June and July and a slightly negative change in discharge between July and August. Note that June was a very dry summer month and July was the monsoon season for this arid Canyon environment and that this pattern is consistent annually based on USGS gauge data (USGS 2014). There is no statistically clear relationship between the change in discharge and the change in gravel surface area for the month of June or any other month based on the data collected. More testing would have to be done before a

The volume of gravel deposits would have to be determined to properly examine the capacity of these bars to store

Gravel surface area is largest at the confluence with the Colorado River, likely because of floodplain overlap

Conclusions

Seasonal rains account for a slight gain in overall discharge between June and July, but not for the continuation of an elevated discharge across the creek between July and August. Inconsistencies in stream discharge can be accounted for by gravel deposits along Bright Angel Creek

The large drop in discharge at PR 8 during July and August can be attributed to gravel aquifer

August included delayed discharge to Bright Angel Creek from water stored within the void spaces of

Higher average discharge allows for greater mobility for native fish species during their spawning periods, increasing access to vital food resources (Whiting et al. 2014).

Bright Angel Creek, even during droughts, has an elevated baseflow maintained by the recharge and subsequent discharge of the gravel aquifers to its waters.

More research is necessary to determine the exact Storage Capacity of these gravels

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