

Population Dynamics of *Gambusia affinis*

In an urban creek

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Background

Vicariance events like storms have an immense potential to move populations of fish through sheer physical force. The questions that arise from this fact are:

- How much rain does it take to move a population?
- What percent of fish in a population are moved?
- How does distance moved vary with storm intensity?

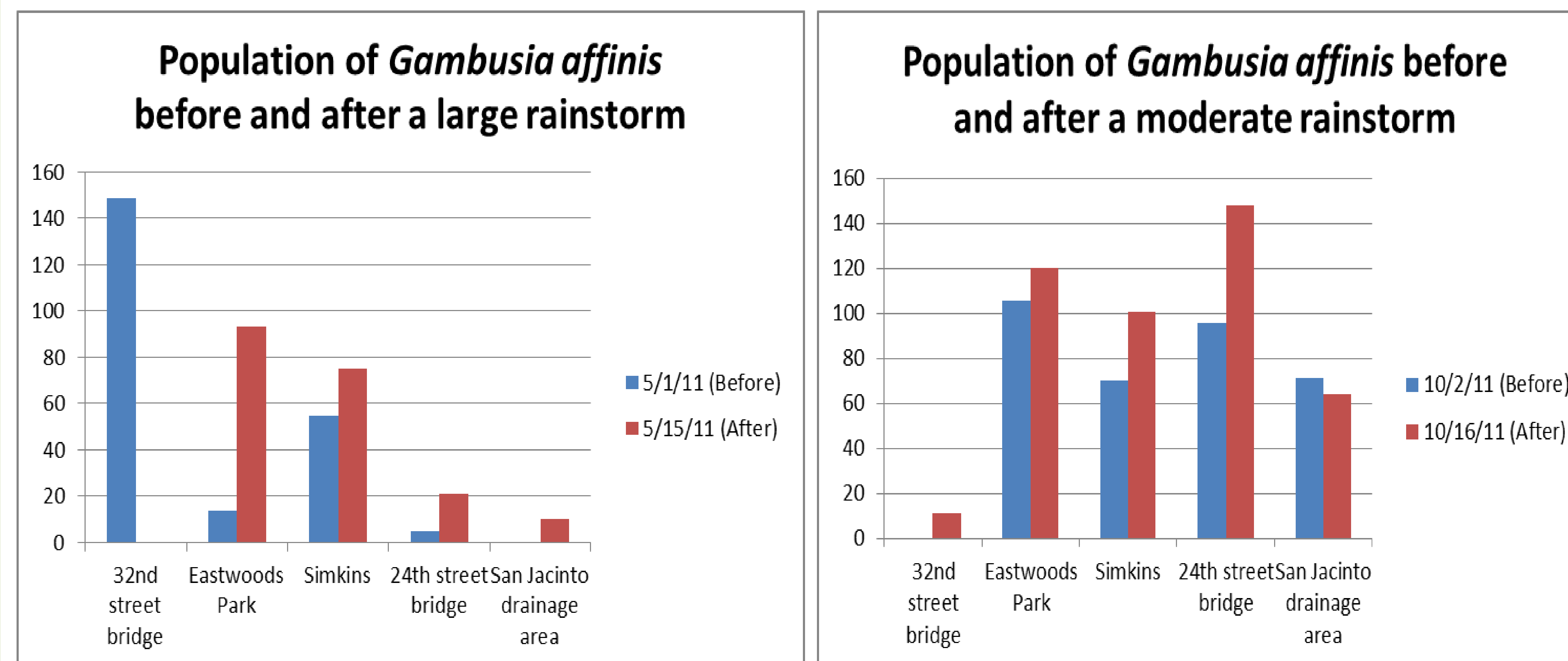
Results

Gambusia affinis movement was correlated with storm surges ($\alpha < .05$). With large rains (over 10 inches in one storm surge), it is possible to move 100% of the fish in an area over 12 blocks. However, moderate storms (4-9 inches) move fewer fish less distance.



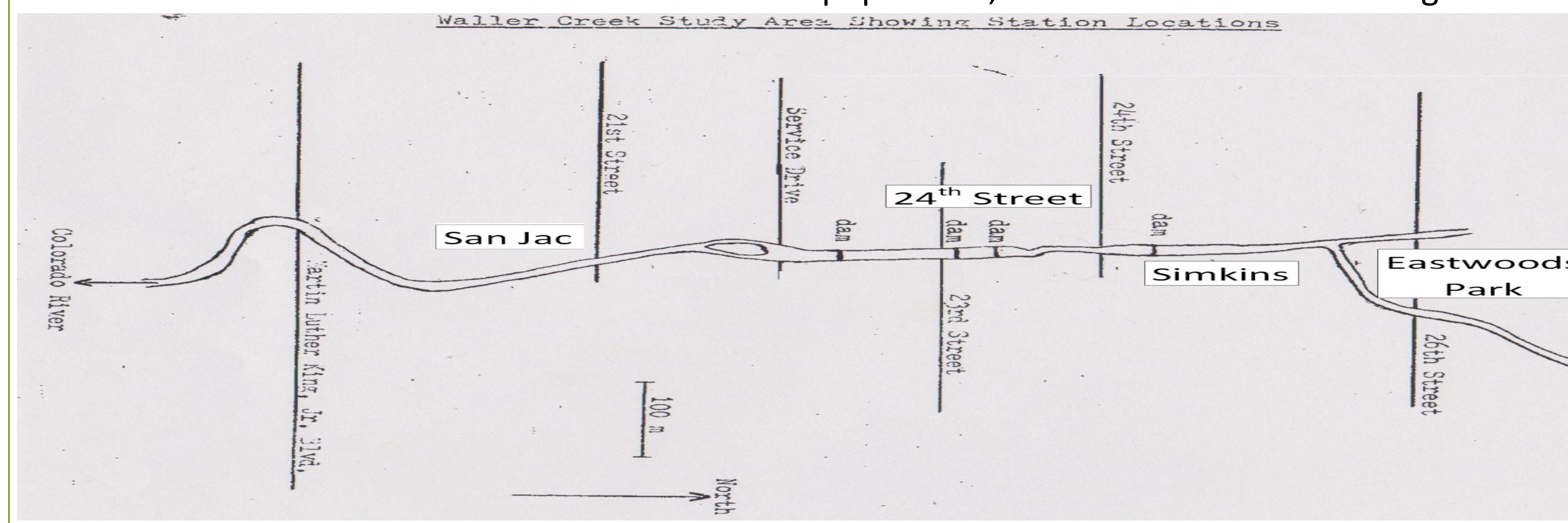
Gambusia affinis

Figures



After a large rainstorm, we see one population go to zero while the others increase.

After a moderate rainstorm we see some shifts in population, but not as dramatic as a large storm.



Materials & Methods

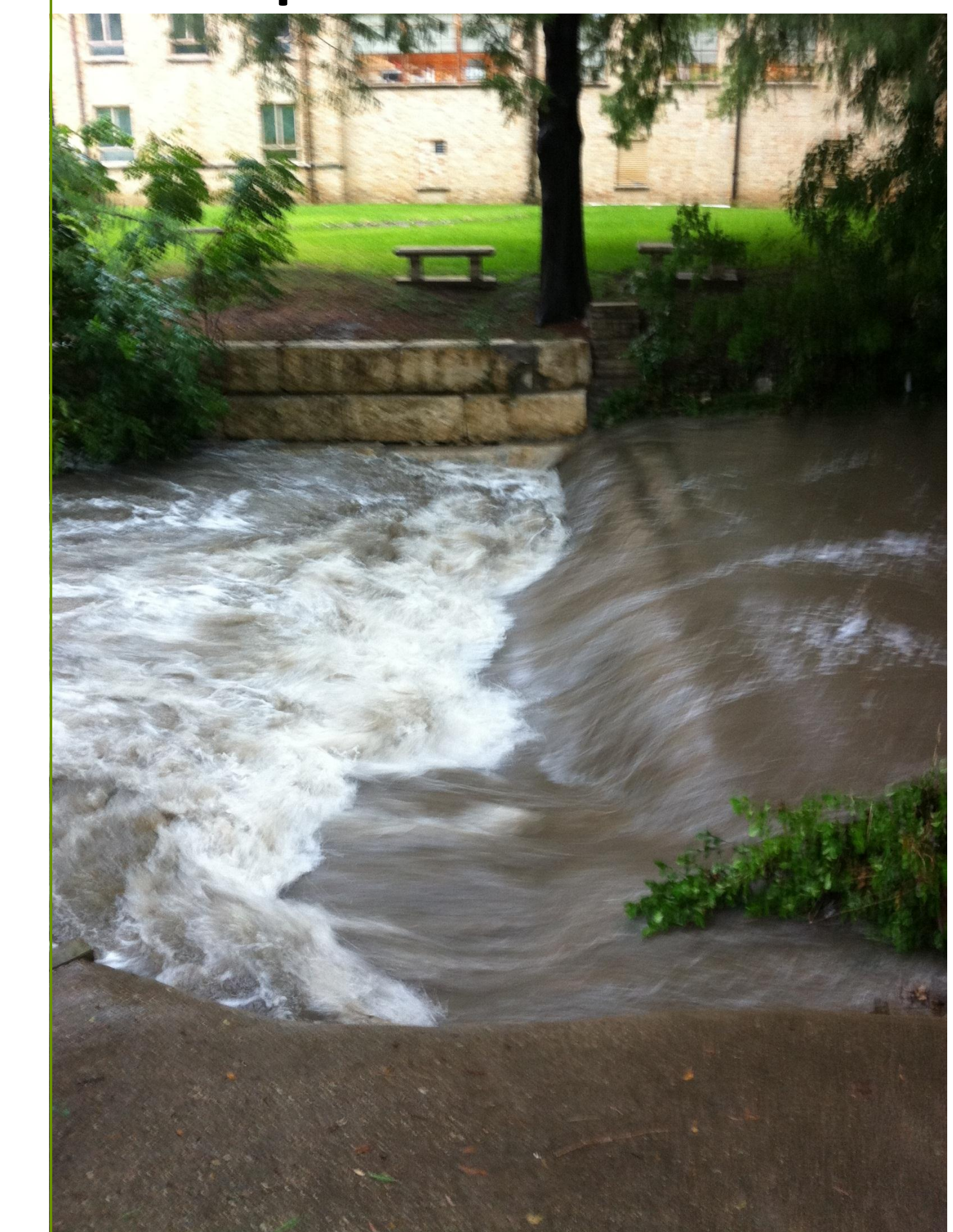
To assess fish biodiversity and abundance, a visual count was taken at five locations along Waller Creek (32nd St, Eastwoods Park, Simkins, 24th St, and San Jacinto) every two weeks for two years. A visual count was done to minimize environmental disturbance.

Future Work

With the recent chemical spill in the creek, my work has shifted from mainly population dynamics to the effects of toxicology and how long until an urban creek can recover.

Discussion

It is apparent that populations are always in flux (1). Storm surges are capable of moving populations downstream a long ways, which has immense ecological consequences (2). Because *G. affinis* are important predators for mosquitoes, storm surges could affect predation on mosquitos and thus also affect



A flood of Waller Creek

local mosquito abundance.

Acknowledgements

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Sources

Picture: http://hbs.bishopmuseum.org/waipio/images/Critters/fish/introduced/fishintro_gambusia_rs.jpg
 1. Edwards, Robert. "Relative and seasonal abundances of the fish fauna in an urban creek ecosystem." MA Thesis. 1976.
 2. Hurlbert, Stuart; Deborah Fairbanks. "Ecosystem alteration from gambusia affinis predation." Science, 175:4022 639-641. 1972.