

# A Survey of Mosquitos (Diptera: Culicidae) in the College Station Area

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**Abstract:** Mosquitoes pose not only an annoyance and nuisance to humans, but also a danger to health. West Nile Virus, Malaria, and Dengue fever are just a few of the diseases vectored by mosquitoes. Entomologists keep track of species of mosquitoes and their ranges through surveys. A collection survey of the College Station metropolitan area was conducted to assess the species currently present. It was hypothesized that *Culex quinquefasciatus* would be the most prevalent species in the area; however, no specimens were collected during this survey. This is a small sample size, and with further trials it is possible that *Culex quinquefasciatus* would be more dominant. Further surveys are required to determine the most prevalent species of mosquitoes in the College Station area utilizing a variety of traps over a more extended period of time.

**Keywords:** mosquito, vector, disease, health, survey

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In recent years, a greater focus has been directed towards public health and the eradication of certain death-causing diseases. According to research over the last 100 years, the mosquito is widely known as the most important arthropod affecting human health in our world today (Mullen 207). The vast majority of society seems to think of mosquitos as nothing but a nuisance and tend to forget this insect when they create their lists of the world's deadliest organisms. We are sometimes fooled by their size, and too often cannot fathom the amount of havoc and damage that a single outbreak of a mosquito-borne disease can do. Mosquitos are quite confident at vectoring dangerous diseases that include, but are not limited to malaria, yellow fever, and dengue fever (Mullen 208). Many of these diseases pose a serious threat to our society and in some instances can cause death, especially in individuals that go untreated.

The purpose of this survey was to determine if there were a higher concentration of the Southern House Mosquito, *Culex quinquefasciatus*, in the College Station area than any other species found. This arthropod is known to be a competent vector of West Nile virus and St. Louis encephalitis, among other diseases, with the former being the biggest concern (Mullen 208). It is imperative to conduct surveys not only in the Bryan/College Station area, but every part of the country in an effort to monitor the movement of these animals. We do this to ensure that disease outbreaks are minimized and that diseases are confined and unable to spread easily.

## Materials and Methods

Both mosquito larvae and adults were collected for this experiment.

Four *Aedes aegypti* larvae were collected from 1350 Harvey Mitchell Pkwy S., College Station, TX on November 1st, 2015. The larvae were discovered in a flower planter that had filled with water from a recent rainstorm. The planter contained potting soil and seedlings, but was overfilled with rain water long enough for the eggs to hatch. Larvae, and the water they hatched in, were collected using a plastic tupperware container (Tupperware, Orlando, FL), and then transferred to a plastic mosquito breeder (Bioquip, Glendale, CA)(Fig. 2). The larvae were placed in the bottom compartment of the breeder and left at room temperature away from direct sunlight. Once the larvae aged into adults, the top portion of the plastic breeder was placed in the freezer for 24 hours. Adults were then placed into glass vials of hand sanitizer for preservation.

One *Anopheles quadrimaculatus* adult was collected from 1725 Harvey Mitchell Pkwy S, College Station, TX on November 20th, 2015. One *Uranotaenia anhydor syntheta* adult was collected from 3405 Treeline Dr, College Station, TX on October 30th, 2015. Both mosquitoes were captured in a DIY mosquito trap (Fig. 3). Materials used to make the traps: a two liter (2L) plastic soda bottle, box cutter, masking tape, active yeast, granulated sugar, hot water, and pantyhose. The 2L plastic bottle's circumference was cut just above and just below the label to create three portions. The neck portion of the bottle was inverted and then taped to the cylindrical portion of plastic bottle, which created a funnel. One tablespoon of granulated sugar was added to one half cup of boiling water to create a sugar solution. Once cooled, the sugar solution was poured into the base of the bottle. One teaspoon of active yeast was added to the sugar solution. A 6" x 4" square

of pantyhose was cut and taped in place to create a diaphragm over the bottle base. The remaining portion of the bottle was then taped to the base portion with the funnel pointing towards the base. This process was repeated to create another trap. Both traps were placed near stagnant pools of water for 48 hours then checked.

Collection by plastic trap was also attempted at Lick Creek Park, College Station, TX, but to no avail. Traps were placed near shallow, stagnant water toward the entrance of the park.

## Results

Mosquitoes were collected from three different areas. The first was 3519 Treeline Dr at The Reserve at College Station apartments. The mosquito collected here was identified as *Uranotaenia anhydor syntheta*. The second was The Woodlands apartments at 1725 Harvey-Mitchell Parkway. The *Anopheles quadrimaculatus* mosquito was found at this location. The third location was Parkway Place apartments at 1350 Harvey-Mitchell Parkway. Four *Aedes aegypti* mosquitoes were found at this location. Attempted collections were also made at Lick Creek Park at 13600 East Rock Prairie Road using two homemade mosquito traps, however, no mosquitoes or larvae were found in the traps.



Figure 1. All mosquitoes collected in glass vials.



Figure 2. BioQuip Mosquito Breeder

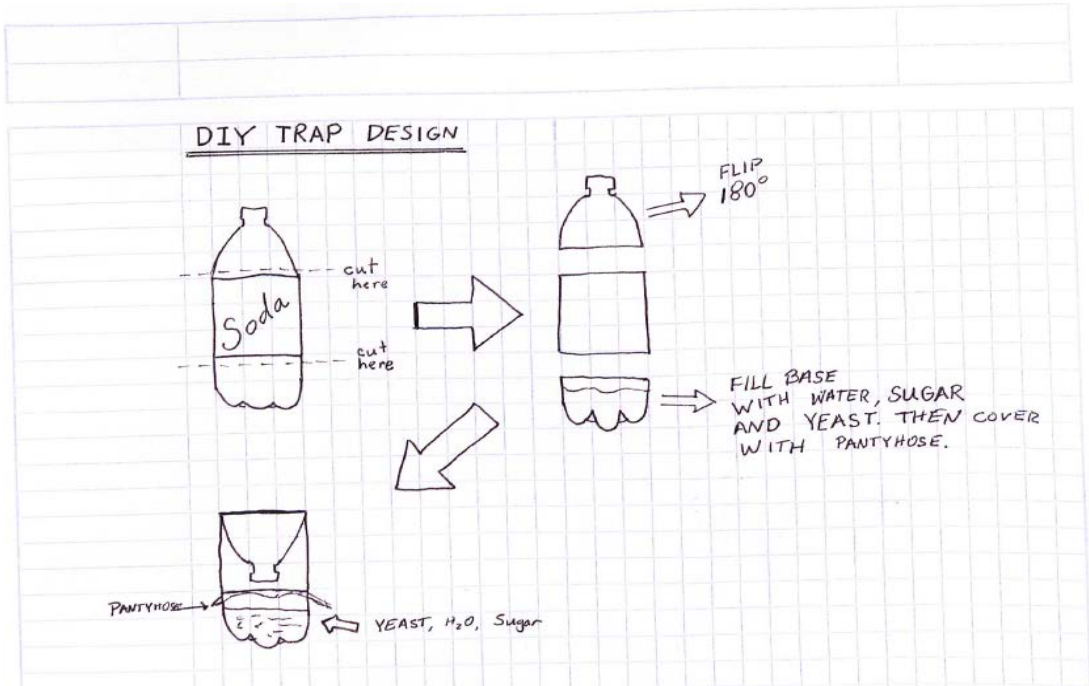


Figure 3: Do It Yourself Mosquito Trap Design

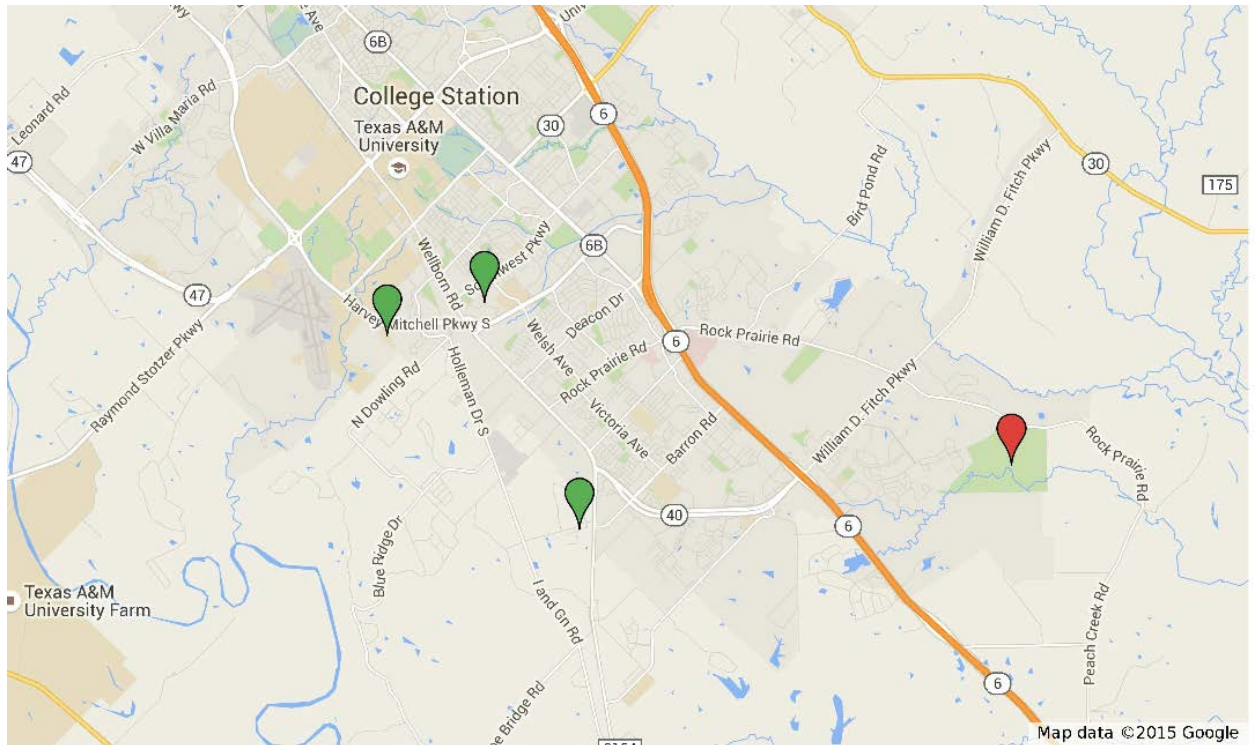


Figure 4. Locations of collection. Green pins indicate successful collections. Red pin indicates unsuccessful collection attempt.

## Discussion

Four of the mosquitoes found were *Aedes aegypti*, one was *Uranotaenia anhydor syntheta*, and the final species was *Anopheles quadrimaculatus*. Finding so many *Aedes aegypti* species was not surprising because their eggs are resistant to desiccation and can survive for many months in dry conditions (Rezende et al.) This species is most known for vectoring Yellow Fever and Dengue Fever. Yellow Fever is not endemic in Texas however, Dengue Fever has seen many new cases arise recently in Texas. Many are cases involving travel, but if the Dengue virus were to become prevalent in Texas, there would be great risk because there is a large amount of the *Aedes aegypti* vector. One surprising finding from our experiment was the

mosquito identified as *Uranotaenia anhydor syntheta*. This species was relatively unknown to us but is found throughout Texas (Belkin and McDonald).

It was expected that *Culex quinquefasciatus* would be the most abundant mosquito in the Bryan/College Station area. However, based on the results, this was disproven. No *Culex quinquefasciatus* were found in the areas surveyed and instead *Aedes aegypti* was the most abundant. As stated earlier, more research and larger surveys need to be conducted in order to accurately describe the mosquito patterns in the area. This is all to be done in an effort to further protect members of the community and surrounding areas from harmful ailments that can be prevented by knowledge of the vectors' presence and proper preparation protocols.

## REFERENCES

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