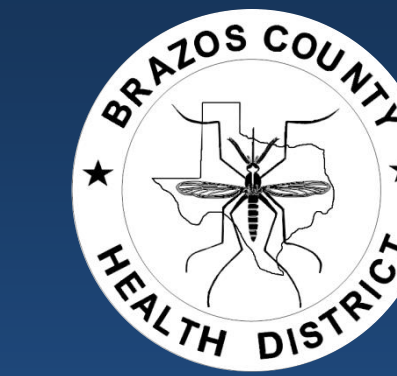


Establishment of a multi-county vector surveillance collaborative using Hurricane Recovery Crisis Cooperative Agreement (CoAg) grant funding



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Abstract

The Brazos County Health District (BCHD) established vector surveillance and disaster response vector control capabilities in underserved, rural communities within the Brazos Valley which lack the population size and funding necessary to sustain local health departments that include these services. This had not previously been attempted due to the difficulties of overcoming jurisdictional boundaries of county and local health departments, as well as limited funding source availability to agency collaboratives for regional responses. An opportunity was identified by BCHD following Hurricane Harvey to apply for one-time grant funding on behalf of eligible rural counties included in a declared disaster area who would not otherwise have participated in the grant opportunity due to the lack of an existing vector program and staff to write a grant request. With permission from the Texas Department of State Health Services (DSHS), BCHD submitted an application and was approved for the Hurricane Recovery Crisis Cooperative Agreement (CoAg) grant funding with intent to use the funds to purchase and distribute vector surveillance equipment and larvicide briquettes to eligible adjacent rural counties who opted in as members of a Brazos Valley Vector Collaborative. County judges and emergency response directors of five adjacent counties were recruited to the collaborative with the agreement of each designating a county employee to conduct periodic adult mosquito surveillance and transport the samples to BCHD for inclusion with BCHD's submissions to Texas DSHS for arbovirus testing. Supplies purchased for distribution to members of the Brazos Valley Vector Collaborative include larvicide briquettes to be deployed in a disaster event where risk of vector borne disease or nuisance mosquitoes inhibiting disaster response might occur, as well as gravid and BG sentinel traps with rechargeable batteries, both of which require no ongoing expenditures for program sustainability purposes.

Program Overview

- **2002 – 2011** BCHD conducted in-house testing of dead birds for West Nile Virus via VecTest® kits; no active surveillance by BCHD
- **2012 – 2014** BCHD conducted seasonal adult mosquito surveillance and submitted samples to DSHS for arbovirus testing in response to increased presence of West Nile Virus
- **2015 – 2018** Zika Response Group initiated with community partnerships in Brazos County in response to Zika outbreak; weekly ovitrap program began using leftover funds from Ebola response; periodic adult mosquito surveillance in response to incidences of human West Nile Virus cases; samples submitted to Texas A&M Veterinary Medical Diagnostic Lab for arbovirus testing
- **2018** BCHD awarded Hurricane Recovery Crisis (CoAg) grant funding through Texas DSHS; funding was used to purchase adult traps, miscellaneous surveillance equipment, ULV truck sprayers, backpack sprayers, and adulticide and larvicide chemicals; partnered with the cities of Bryan and College Station to host equipment and chemicals, and provide pesticide control applications in response to an arbovirus outbreak
- **2019** BCHD awarded a Vector Control Collaborative Grant through the National Association of City & County Health Officials (NACCHO); established a mentor-mentee relationship with Harris County Mosquito & Vector Control Division; funding was applied to training, additional surveillance equipment and supplies, personal protective equipment (PPE), and RAMP® Reader for in-house Rapid WNV testing; established year-round adult mosquito surveillance program with sample submission to DSHS for arbovirus testing in Brazos County; increased surveillance program to include surrounding counties
- **2020** BCHD awarded a second Hurricane Recovery Crisis CoAg grant through Texas DSHS; establishment of Brazos Valley Vector Collaborative; funding used to purchase additional surveillance equipment and control chemicals to be distributed to participating counties within the Brazos Valley to aid in arbovirus outbreaks or following disaster events; continued year-round surveillance in Brazos County; continued surveillance in surrounding counties

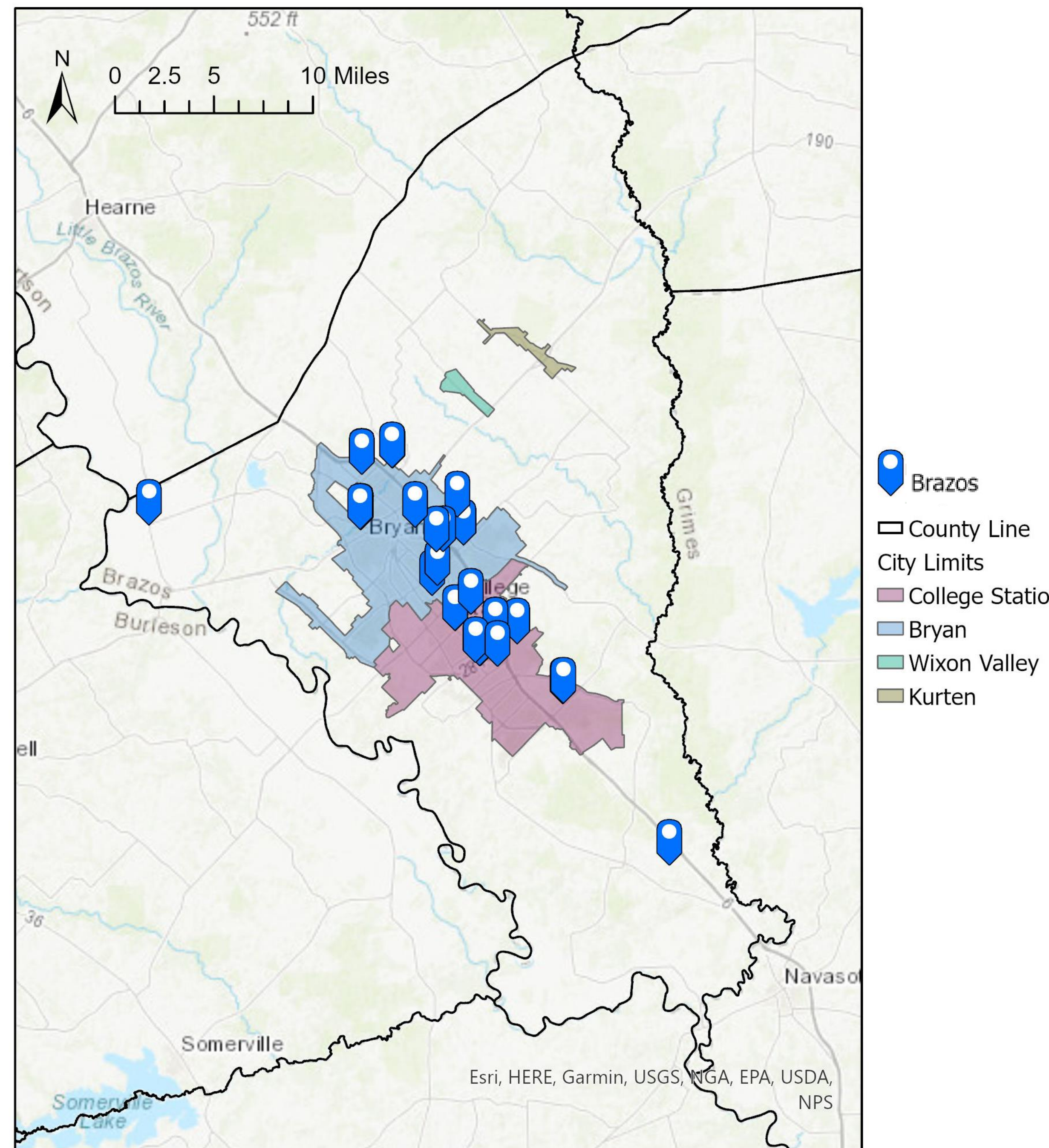
- **2021** Continued utilization of community partnerships to provide surveillance and control based on identification of arbovirus presence in Brazos County; trained designated personnel in each of the surrounding counties with membership in the Brazos Valley Vector Collaborative able to conduct adult mosquito surveillance and transport the samples to BCHD for inclusion with BCHD's submissions to Texas DSHS for species identification and arbovirus testing; establishment of self-sufficient and sustainable vector surveillance programs and disaster response vector control capabilities in all counties within the Brazos Valley; continued support to members of the Brazos Valley Vector Collaborative to help identify the presence of arbovirus and to assist with control in the event of an arbovirus outbreak or following a declared disaster event

Previous Capabilities

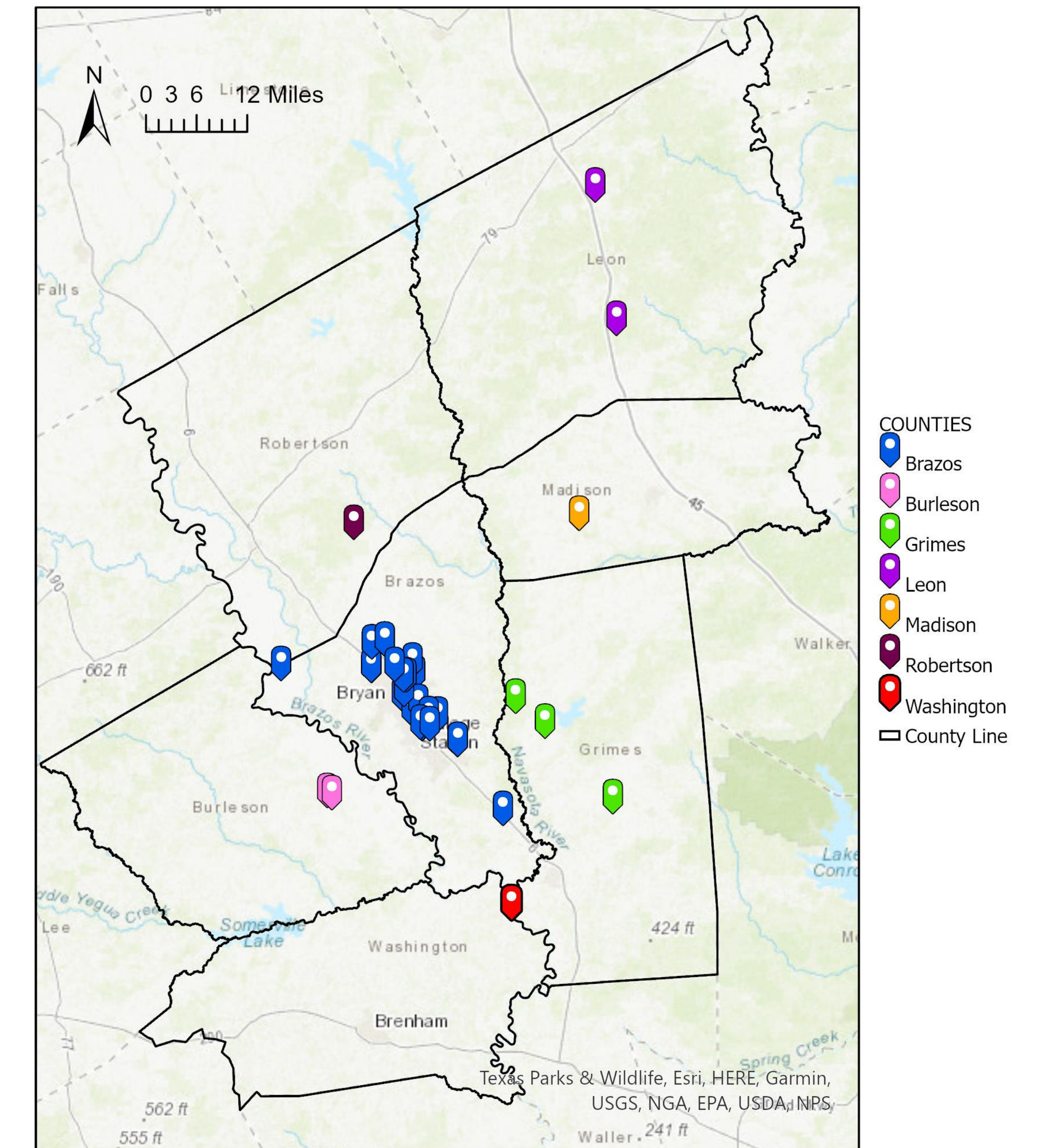
Post Hurricane Harvey

Future Capabilities

2019-2020 Adult Mosquito Surveillance



In Brazos County, our adult mosquito surveillance program consists of weekly deployment of Gravid Traps, CDC Light Traps, and BG Sentinel Traps year-round (weather dependent). We have four static locations, one in each of the county precincts, and other locations within the county are selected based on complaints received and the presence of arbovirus. Locations selected to place traps are also secure sites including fire departments and other city or county properties to reduce the risk of loss or damage to the traps. Samples of specimen collected are processed in-house and then sent to DSHS for species identification and arbovirus testing.



Within the six surrounding counties, our adult mosquito surveillance program currently consists of seasonal deployment of Gravid Traps, CDC Light Traps, and BG Sentinel Traps. Factors considered in selection of trap locations in these counties includes: secure site availability, personnel availability, and proximity to BCHD. Samples of specimen collected are processed in-house and then sent to DSHS for species identification and arbovirus testing. Future surveillance locations to be conducted by individual counties will be determined in collaboration with BCHD.

Brazos Valley Demographics



| County | Area | Population* |
|------------|-----------------------|-------------|
| Brazos | 591 mi ² | 229,211 |
| Robertson | 865 mi ² | 17,074 |
| Leon | 1,081 mi ² | 17,404 |
| Madison | 472 mi ² | 14,284 |
| Grimes | 802 mi ² | 28,880 |
| Washington | 622 mi ² | 25,882 |
| Burleson | 677 mi ² | 18,443 |

* Data collected from the 2019 Annual Population Estimates from US Census

The Brazos Valley is a region in Central & Southeast Texas that consists of seven counties: Brazos, Robertson, Leon, Madison, Grimes, Washington, and Burleson. It is roughly twice the size of the state of Delaware in square mileage. Brazos County, the location of BCHD and home to Texas A&M University, is centrally located amongst the other counties. Over 90% of the population in Brazos County is distributed between the cities of Bryan and College Station. The six surrounding counties within the Brazos Valley are rural, sparsely populated, and have fewer cities despite all but one being larger in size than Brazos County.

Impacts

| Species Recorded Prior to 2019 | |
|--------------------------------|-----------|
| County | # species |
| Brazos | 52 |
| Robertson | 6 |
| Leon | 14 |
| Madison | 1 |
| Grimes | 7 |
| Washington | 7 |
| Burleson | 12 |

| Species Recorded Following Expanded Surveillance by BCHD | |
|--|-----------|
| County | # species |
| Brazos | 52 |
| Robertson | 7 |
| Leon | 19 |
| Madison | 7 |
| Grimes | 8 |
| Washington | 10 |
| Burleson | 12 |

With minimal funding and staff, we have not only established a fully functional adult mosquito surveillance program at BCHD, but have expanded that surveillance capacity into surrounding, underserved counties that previously did not have this capability. We have helped identify risk in their communities by increasing their species records, including species that are capable of vectoring arbovirus. Once the counties are self-sufficient in their small-scale surveillance programs, they will be able to contribute to these records and add to the data history for their respective county. In the event of a disaster declaration, all seven counties within the Brazos Valley will have the documented evidence required (surveillance data history) to receive federal money and assistance should they need it for mosquito control.