

Distribution of the Australian Redclaw crayfish in Texas

Lance Williams, Marsha Williams, Jared Dickson, and Addie Munn
University of Texas at Tyler

Monica McGarrity and Archis Grubh
Texas Parks and Wildlife Department

Crayfish

357 species of crayfish in southern US

56 native species in Texas

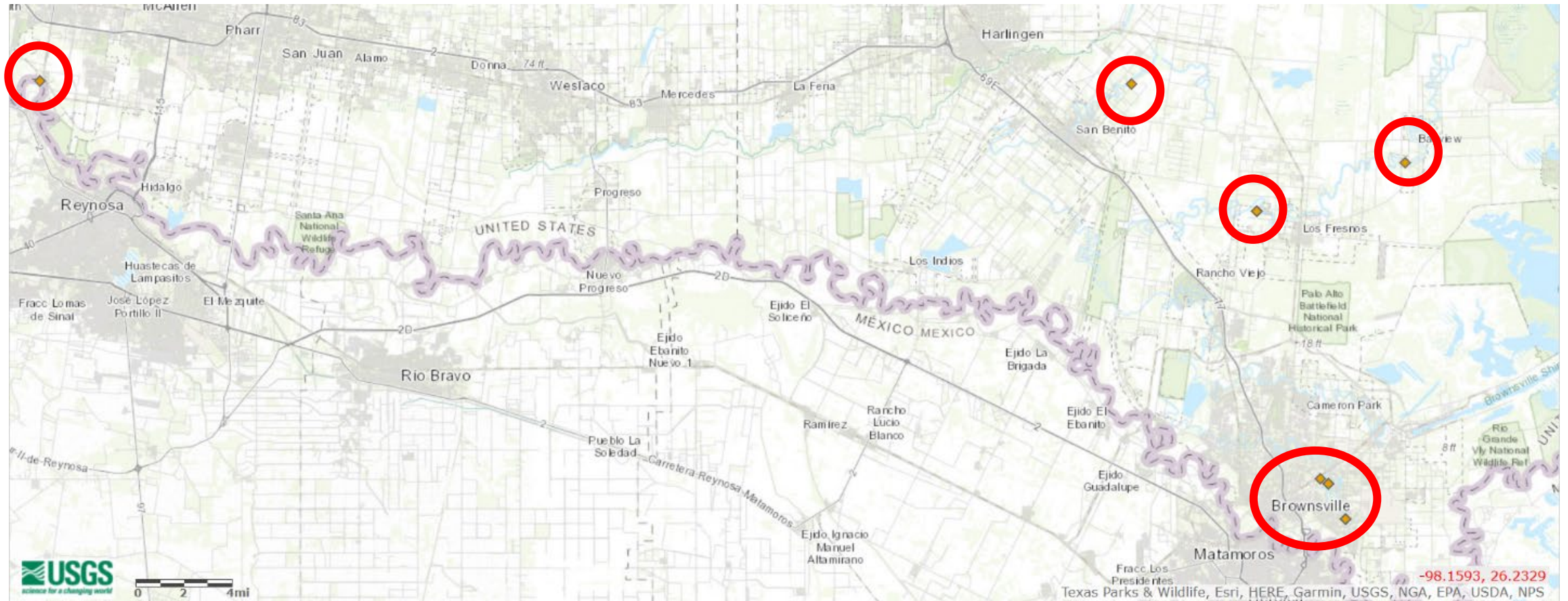
Poor understanding of basic distribution and ecology

Many are threatened with various anthropogenic factors, including invasive species (12 TCAP species in Texas)

Australian Redclaw crayfish

- Native to Australia & New Zealand
- Used in aquaculture around the world
- Found in and around Brownsville, TX
- Some studies indicate potential to impact native species
- Larger than native species
- Can occur in high densities, move over land, easily spread




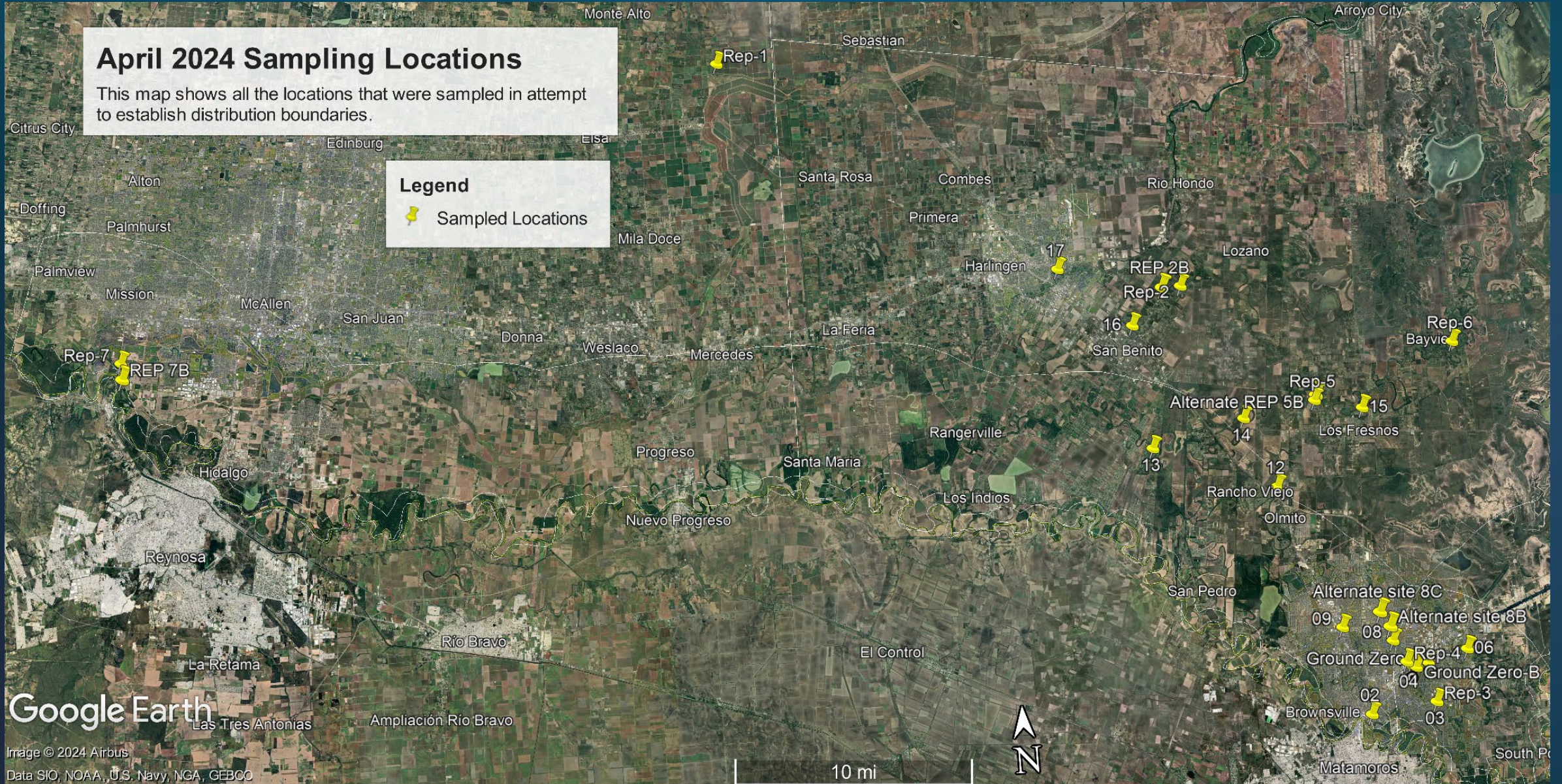


April 2024 Sampling Locations

This map shows all the locations that were sampled in attempt to establish distribution boundaries.

Legend

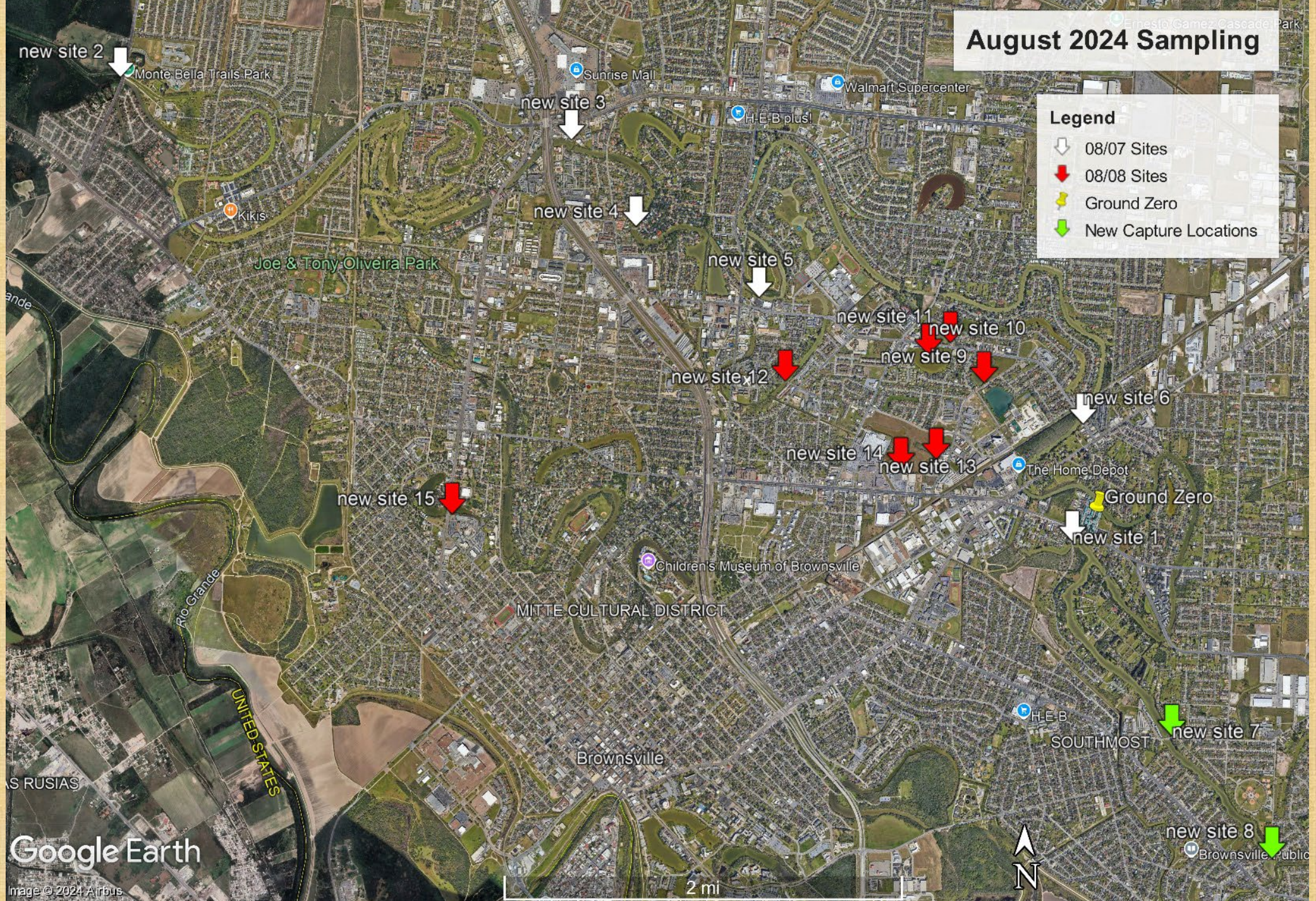
 Sampled Locations



August 2024 Sampling

Legend

- 08/07 Sites
- 08/08 Sites
- Ground Zero
- New Capture Locations



Methods

- Seining, cast netting, **baited minnow and crayfish traps**
- Sampled in April (21 sites), August (17 sites, 14 were new sites)
- Will sample in November, March, and May/June
- Sex, weights, measurements, and reproductive condition
- Water chemistry (Hydrolab) & habitat data





Preliminary Results

- April – 2 individuals at one site
 - 1 male
 - 1 possible male intersexual
- August – 13 individuals collected at 4 sites
 - 8 males
 - 3 females
 - 2 juveniles (at Ground Zero)
 - 1 of the males intersexual

Future plans

- Landscape modeling using GIS to predict establishment and spread of Australian Redclaw (Lustig et al., 2017)
 - Modular Dispersal Framework (MDIG)
- Associate environmental data with Redclaw presence/absence – logistic regression and Akaike Information Criterion
- Occupancy modeling (Magoulick et al., 2017)
- Dr. Ryan Shartau – physiological tolerances in lab
- Dr. Matt Greenwold – genetic analysis

Lustig A., S.P. Worner, J.P.W. Pitt, C. Doscher, D.B. Stouffer and S.D. Senay. 2017. A modeling framework for the establishment and spread of invasive species in heterogeneous environments. *Ecology and Evolution* 7:8338-8348.

Magoulick, D., DiStefano, R., Imhoff, E., Nolen, M., and Wagner, B. 2017. Landscape and local-scale habitat influences on occupancy and detection of stream-dwelling crayfish: implications for conservation. *Hydrobiologia* 799:217-231.