Freshwater Mussel Research

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Central Texas Freshwater Mussels

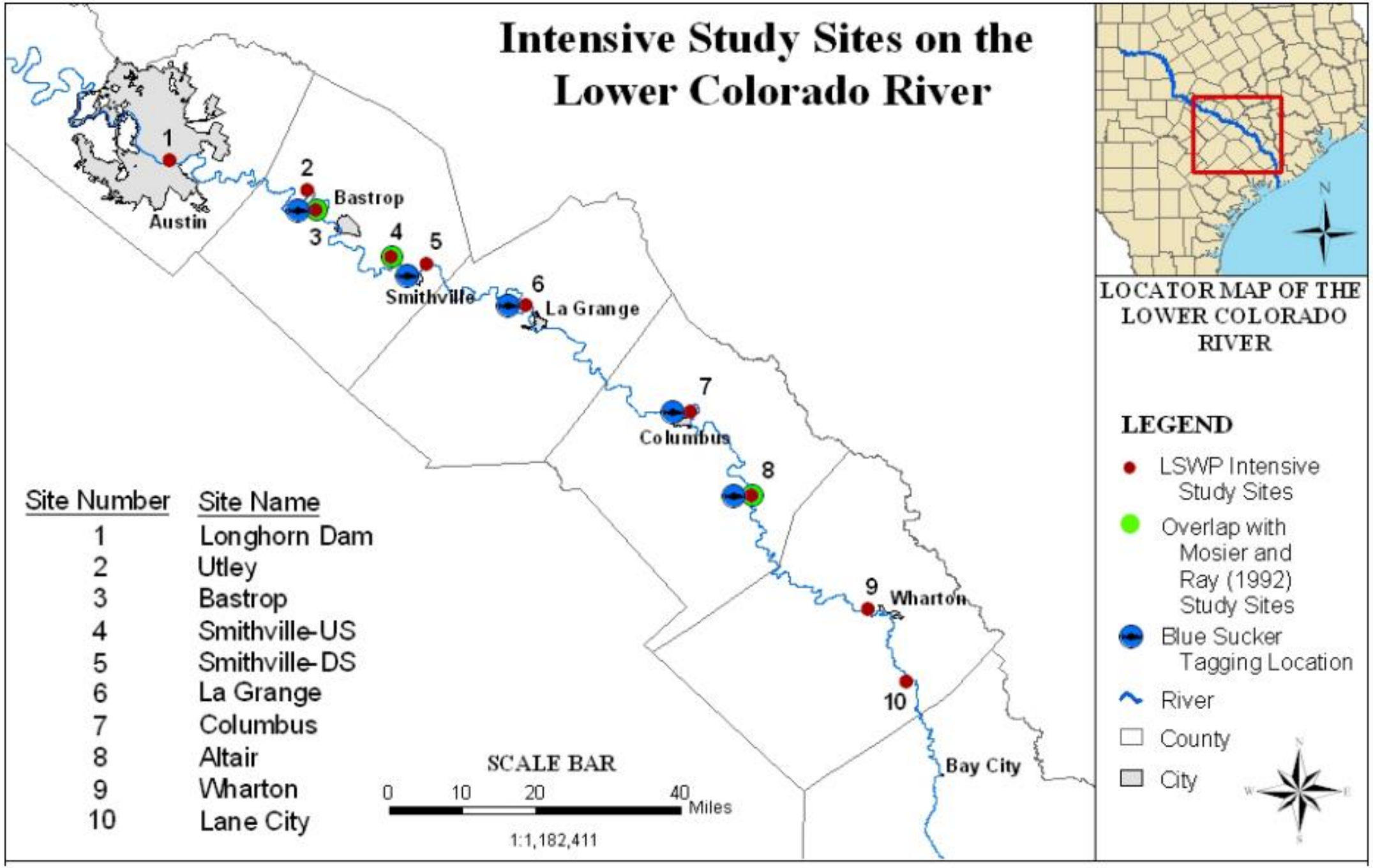
Historic Distribution

Study Species	Brazos Basin	Colorado Basin	Guadalupe Basin
Texas Fatmucket		X	X
False Spike	X	X	X
Smooth Pimpleback	X	X	
Texas Fawnsfoot	X	X	
Texas Pimpleback		X	X

Surveys

Locations

- Brazos River
  - Little River drainage
  - Upstream of Possum Kingdom Reservoir
- Colorado River
  - Lower Colorado River (between Longhorn Dam and Bay City Dam)
  - Middle Colorado (between O.H. Ivy Lake and Lake Buchanan)
- Upper Guadalupe River
  - Upstream of Canyon Lake


Intensive Study Sites on the Lower Colorado River
1
Austin
2
Bastrop
3
4
5
Smithville
6
La Grange
7
Columbus
8
9
Wharton
10
Bay City
Site Number Site Name
1 Longhorn Dam
2 Utley
3 Bastrop
4 Smithville-US
5 Smithville-DS
6 La Grange
7 Columbus
8 Altair
9 Wharton
10 Lane City
SCALE BAR
0 10 20 40 Miles
1:1,182,411
LOCATOR MAP OF THE LOWER COLORADO RIVER
LEGEND
LSWP Intensive Study Sites
Overlap with Mosier and Ray (1992) Study Sites
Blue Sucker Tagging Location
River
County
City

Smooth Pimpleback

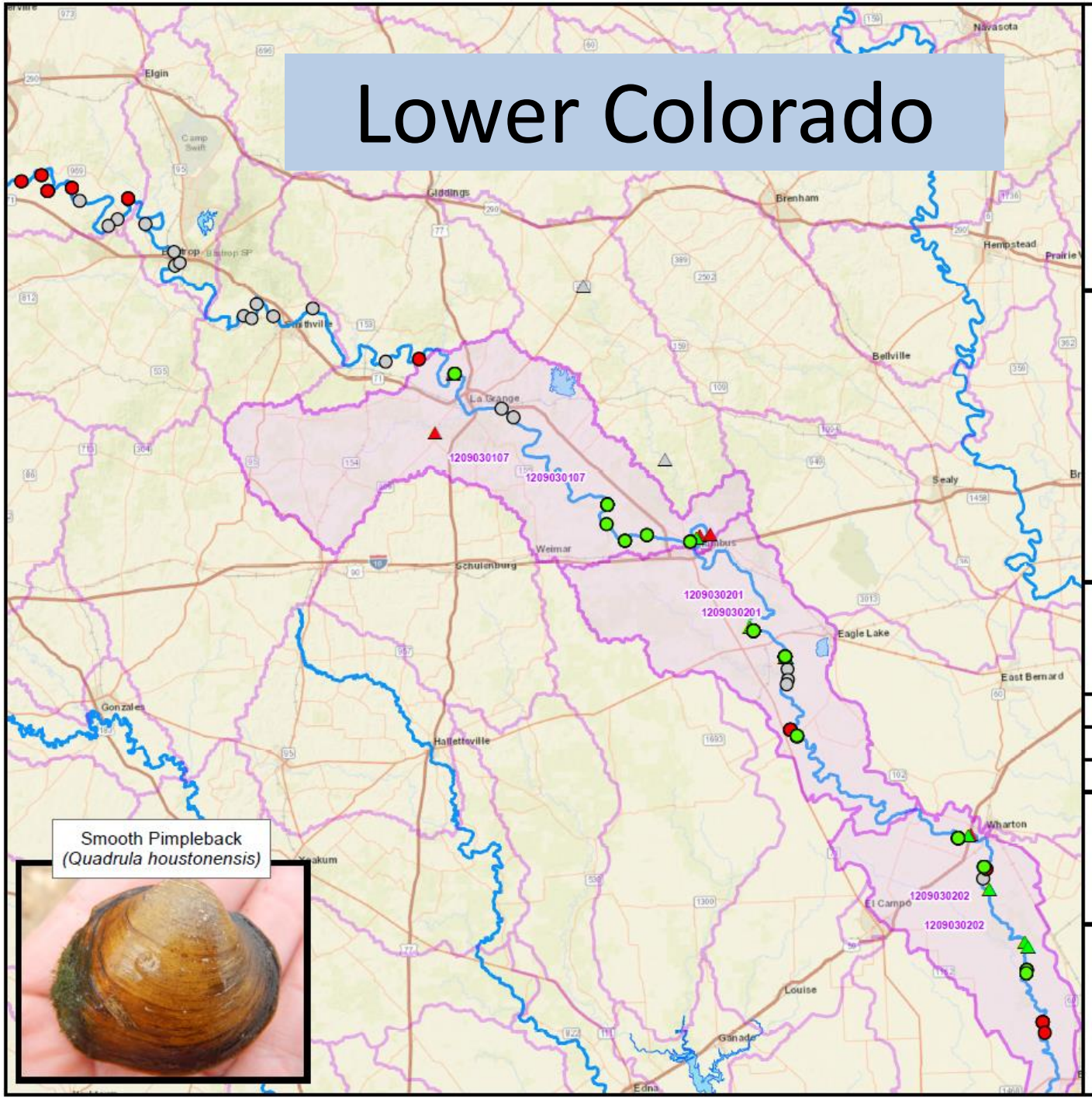
Texas Fawnsfoot

False Spike

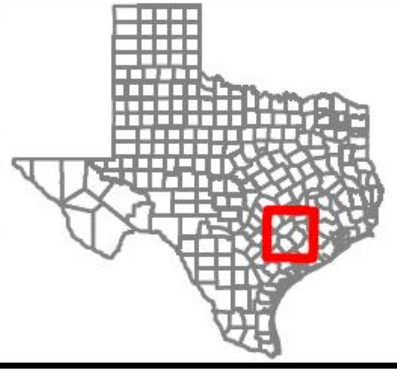
Texas Pimpleback

Texas Fatmucket

Lower Colorado



Smooth Pimpleback
(Quadrula houstonensis)



Habitat Protocol / Other Surveys

- Smooth Pimpleback Present
- Target Species Present (Not Smooth Pimpleback)
- Mussels Present (Non-Target Species only)
- No Mussels Present
- TX Rivers
- 10 Digit HUC

0 10 20
Miles
1 in = 12 miles

N

Imagery: ESRI Streets Basemap

Projection: NAD 1983 UTM Zone 14N

Date Created: 10/19/2017

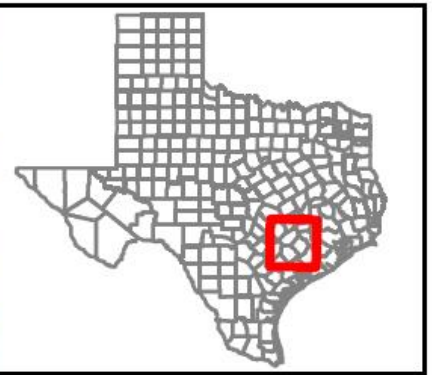
CPA Mussel Surveys

Lower Colorado River
Smooth Pimpleback
(Quadrula houstonensis)

BIO-WEST

TEXAS STATE UNIVERSITY
SAN MARCOS
Department of Biology

Lower Colorado



Habitat Protocol / Other Surveys

- Texas Pimpleback Present
- Target Species Present (Not Texas Pimpleback)
- Mussels Present (Non-Target Species only)
- No Mussels Present
- TX Rivers
- 10 Digit HUC

0 10 20
Miles
1 in = 12 miles

N

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Date Created: 10/19/2017

CPA Mussel Surveys

Lower Colorado River
Texas Pimpleback
(Quadrula petrina)

Texas Pimpleback
(Quadrula petrina)

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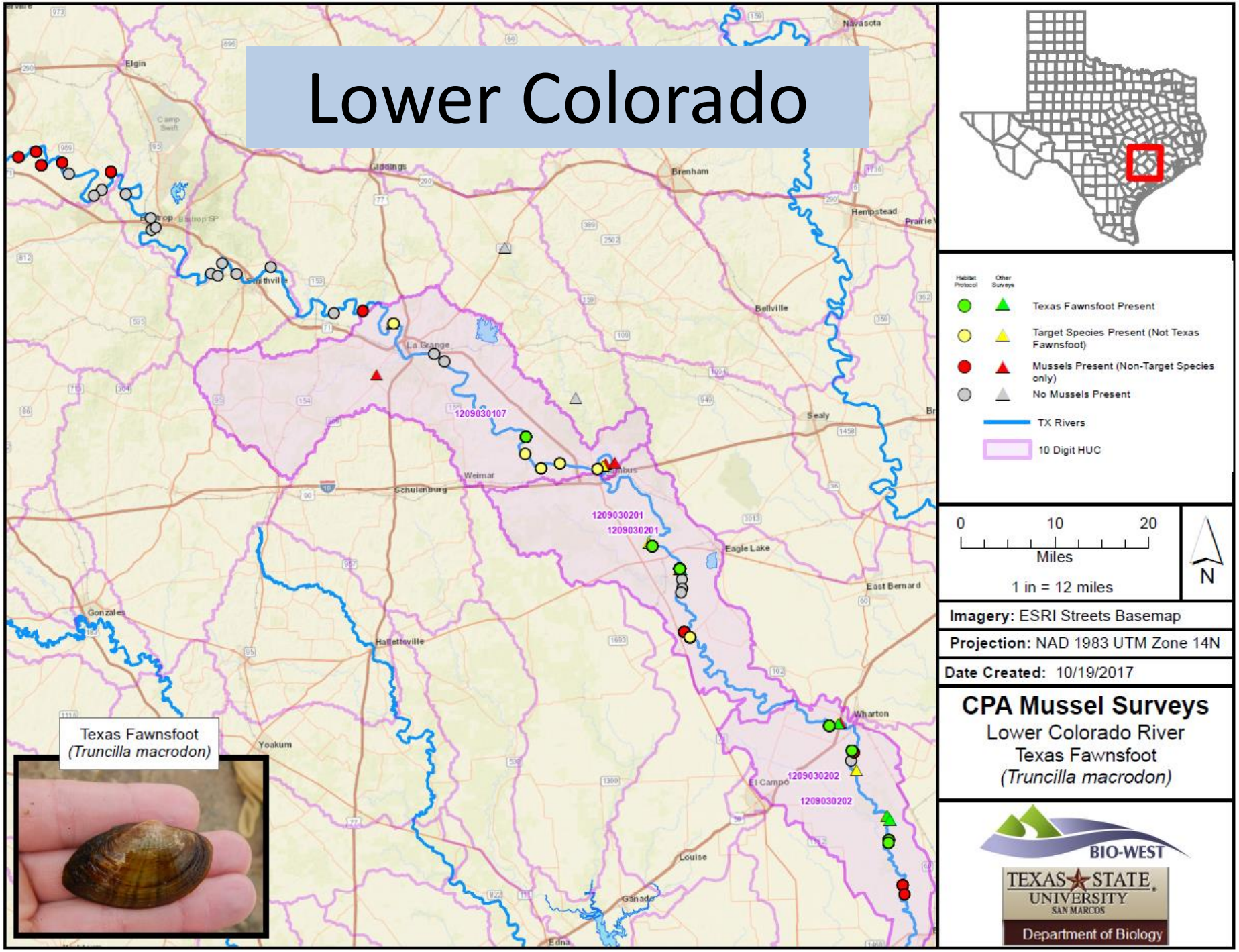


Texas Fawnsfoot Present

Target Species Present (Not Texas Fawnsfoot)

Mussels Present (Non-Target Species only)

No Mussels Present

TX Rivers

10 Digit HUC

0 10 20

Miles

1 in = 12 miles

N

Imagery: ESRI Streets Basemap

Projection: NAD 1983 UTM Zone 14N

Date Created: 10/19/2017

CPA Mussel Surveys

Lower Colorado River

Texas Fawnsfoot

(Truncilla macrodon)

BIO-WEST

TEXAS STATE UNIVERSITY SAN MARCOS

Department of Biology

Task 2: Applied Research

Auburn University

- Thermal and hypoxia tolerance experiments for adult and juvenile mussels
- Nitrogenous compounds and salinity tolerance experiments on adult mussels
- Turbidity tolerance experiments

Isotope Analysis

- Stable isotope analysis to evaluate relative contribution of each food source resources

SMARC

- Desiccation tolerance on adult mussels

Environmental Flow Analysis

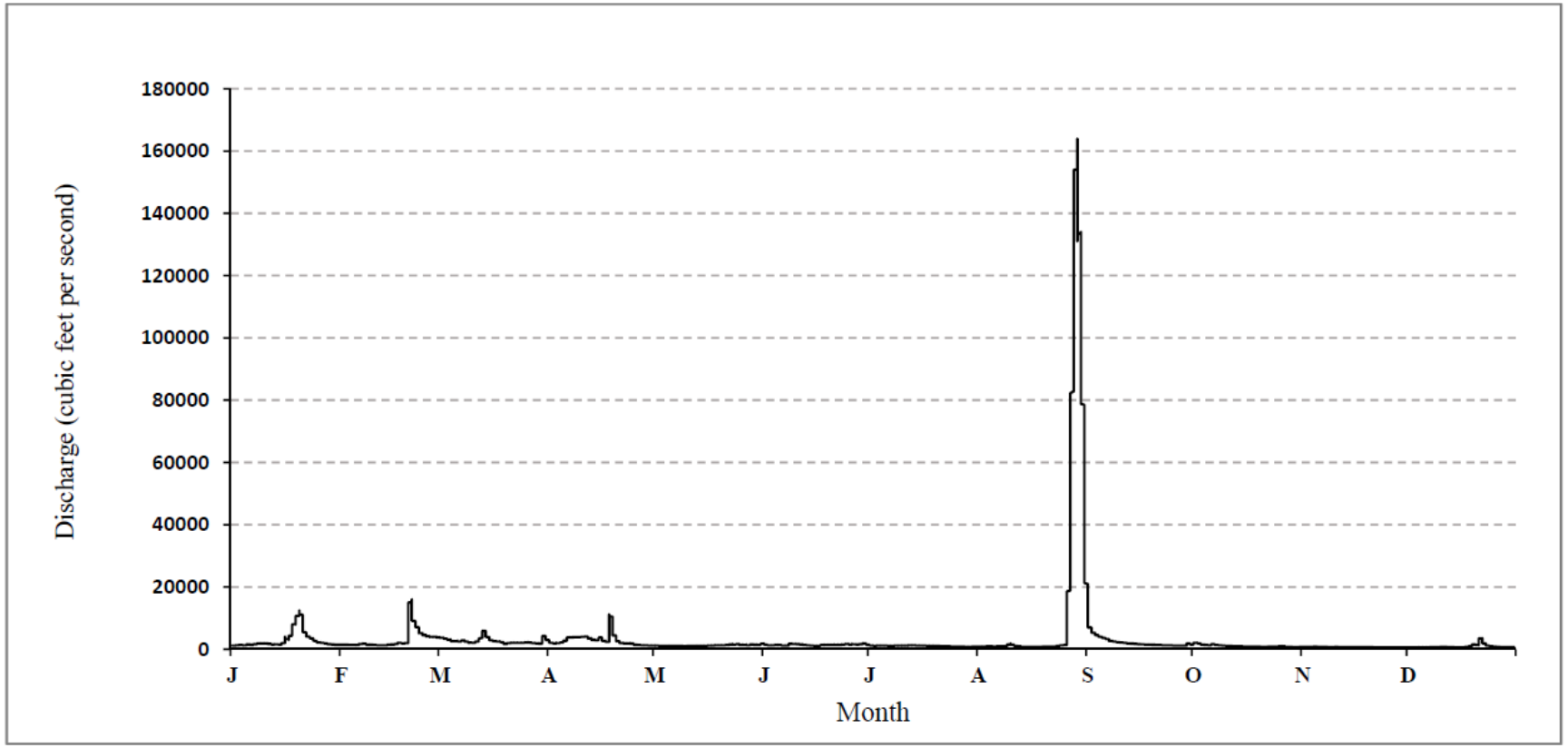


Figure 2. Discharge from the USGS gage on the Lower Colorado River at Columbus (USGS gage# 08161000) during 2017.

Mark-recapture studies

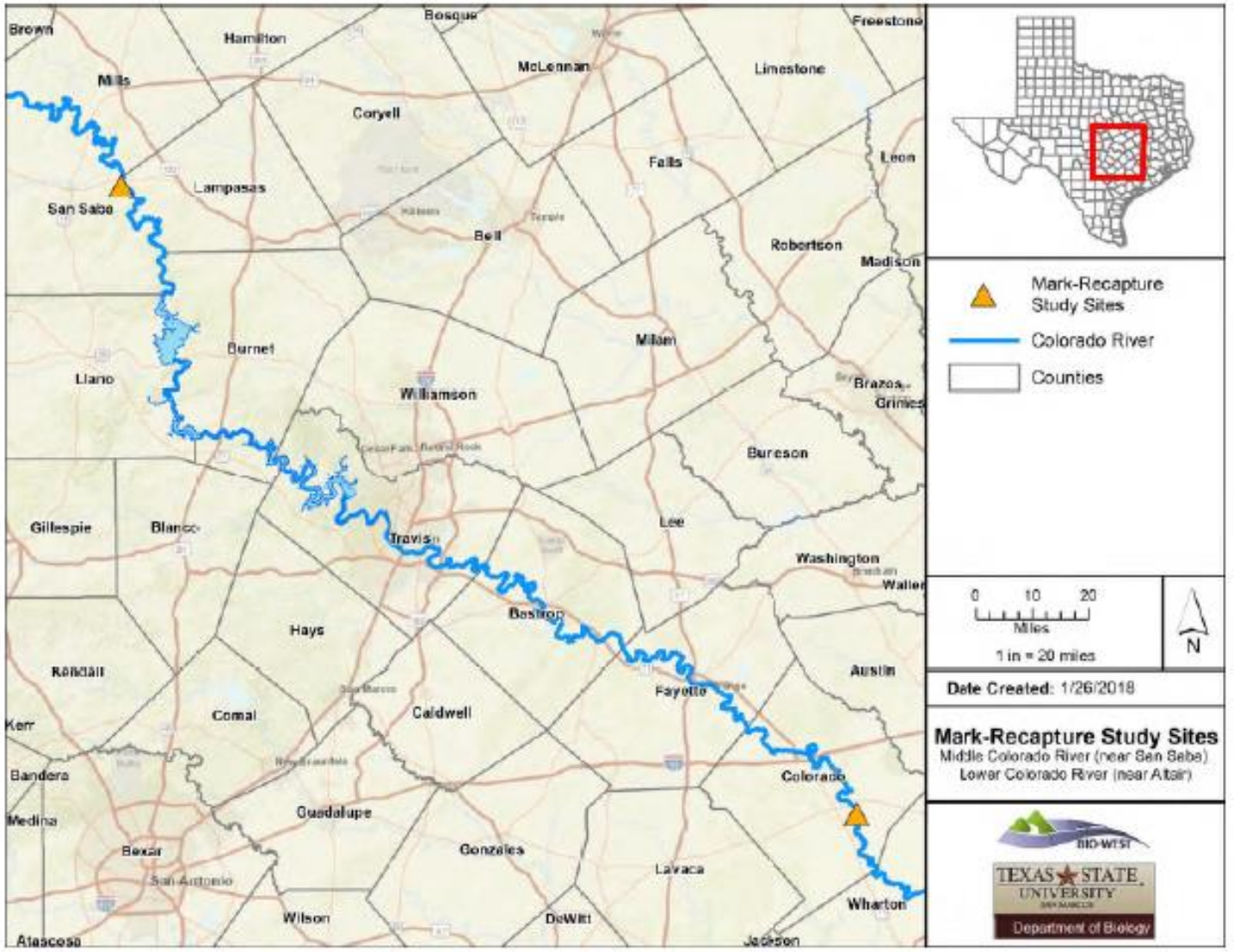


Figure 1. Map of mark-recapture study sites in the Colorado River basin, Texas.

Freshwater Mussel Propagation

Collecting freshwater mussel brood stock

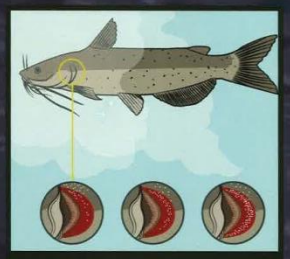
Checking gravidity

Extracting glochidia

Host fish in infestation bath

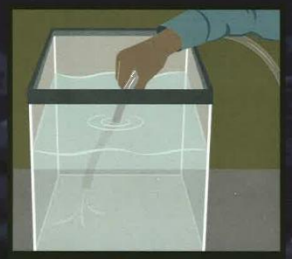
Adding glochidia to infestation bath

Host fish exposed to glochidia


Glochidia attaching to fish gills

Close up of glochidia attaching to fish gill filaments

Maintaining fish while glochidia metamorphose into juveniles


Collecting newly metamorphosed juvenile mussels from the fish tank

Example indoor system for mussel culture

Example outdoor system for mussel culture

Tagged mussels for release

Releasing juveniles back to the wild