

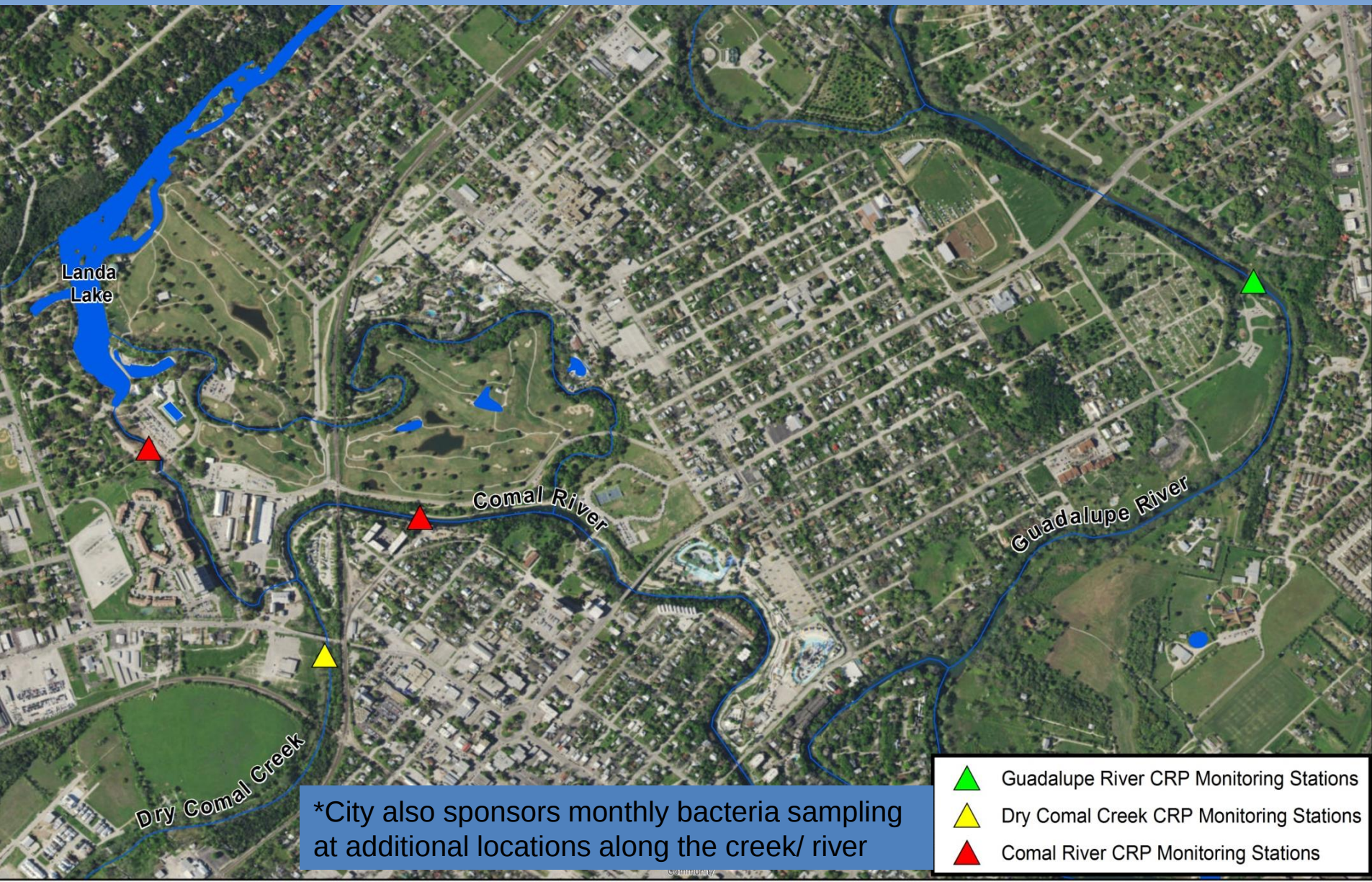


Bacteria Source Tracking to Inform Development and Implementation of Bacteria Reduction Activities in the Comal River and Dry Comal Creek Watersheds

New Braunfels, TX

Mark Enders
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City of New Braunfels

Dry Comal Crk and Comal River Clean Rivers Prgm (CRP) Monitoring Locations



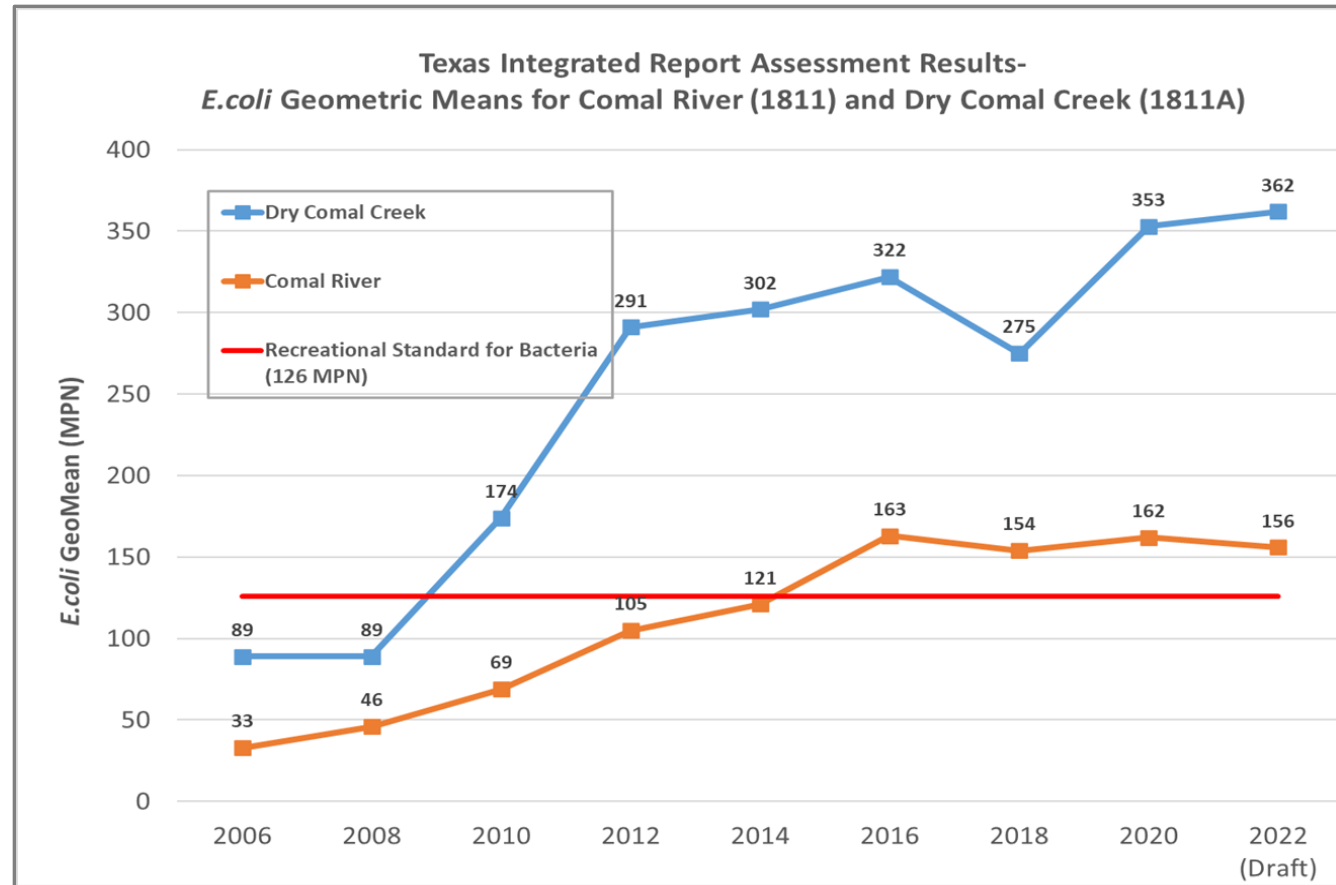
Bacteria Levels-Dry Comal Crk and Comal Rvr

➤ Dry Comal Creek

- Initially placed on the 303(d) list for bacteria in 2010.

➤ Comal River

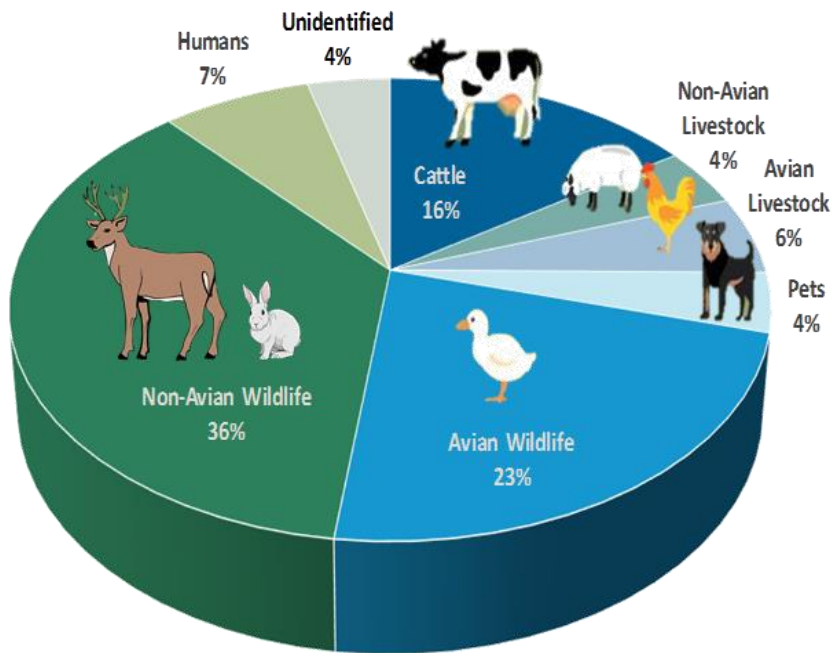
- Bacteria levels have been increasing over the past 10 years.
- Initially included on 303(d) list for bacteria in 2016



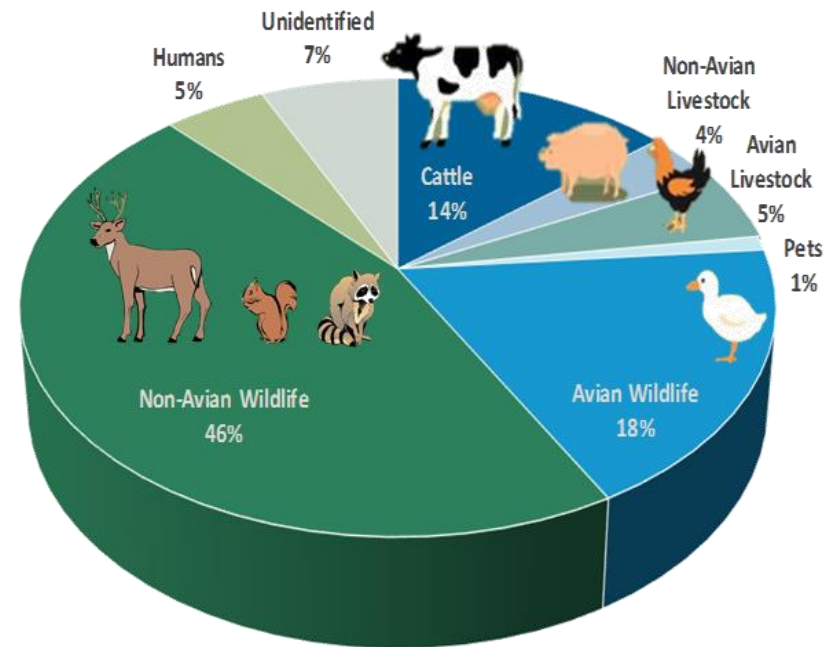
Bacteria Source Tracking Results

- Bacteria Source Tracking (BST) analysis was conducted in 2013 & 2016 by Texas A&M/ AgriLife Research lab to identify sources of bacteria in creek/ river.
- Three sample events per site for each BST analysis. Sampling performed in Fall.
- Approx. 60% of the bacteria found in Comal River & Dry Comal Creek from wildlife.

Dry Comal Creek Average BST Results
2013 and 2016 Data



Comal River Average BST Results
2013 and 2016 Data



Watershed Protection Planning for the Dry Comal Creek and Comal River

- Prior to and at the time of BST analyses, the City and its project partners were in the process of developing a Watershed Protection Plan (WPP) to address bacteria levels in the Dry Comal Creek and Comal River watersheds.
- The BST results help to prioritize bacteria reduction initiatives included in the WPP.
- TCEQ and EPA have accepted WPP
- City is currently implementing the WPP



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WPP Bacteria Reduction Measures

• Overabundant Urban Wildlife

- Wildlife feeding restrictions & education- CoNB Feeding Ordinance
- Urban wildlife management – Active mgmt of deer/ waterfowl populations

• Urban Stormwater

- Pet Waste BMPs – education, pet waste stations, etc
- LID and Stormwater Treatment BMPs

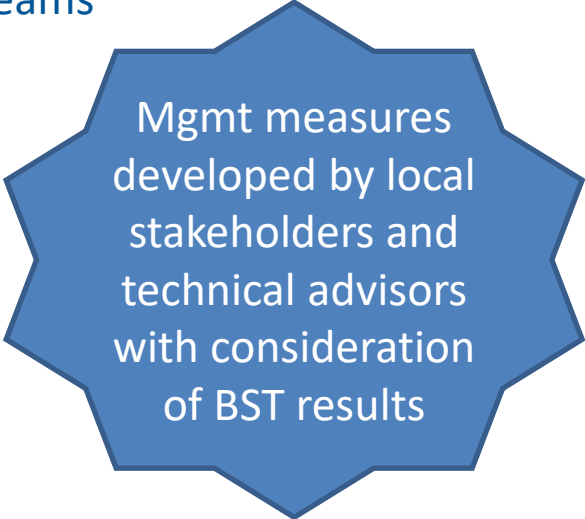
• Livestock

- Voluntary Water Quality Mgmt Plans (WQMPs) for individual ranches
- Education and Outreach – ex. Lone Star Healthy Streams
- Partner with local Soil Water Conservation Districts

• Septic Systems/ OSSFs

- Septic system operation education
- Targeted inspections to identify failing OSSFs
- Partner with Comal County on OSSF Education

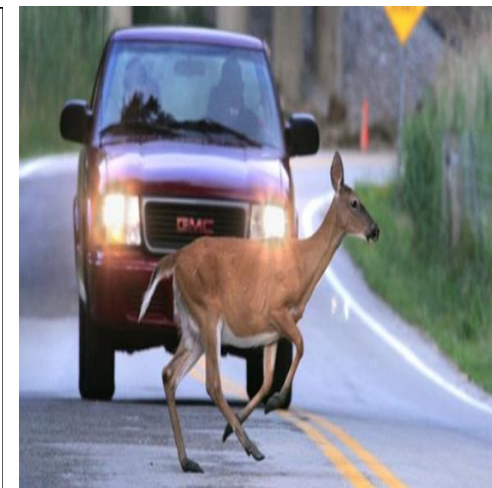
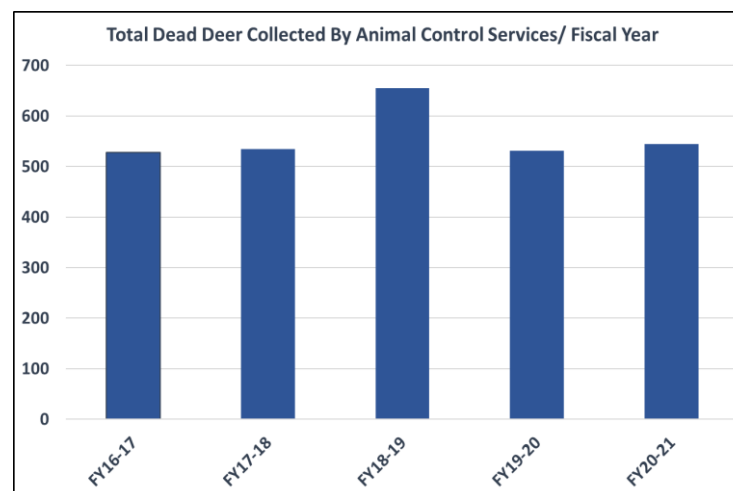
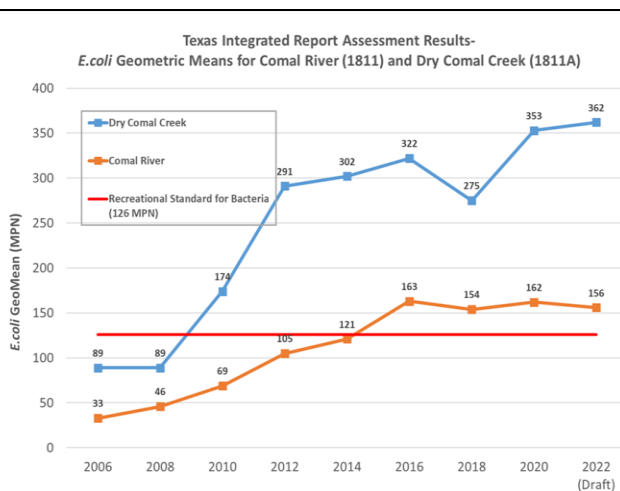
• Education and Outreach



Mgmt measures developed by local stakeholders and technical advisors with consideration of BST results

Raising Awareness of Urban Wildlife Issues

- Worked closely with Urban Biologist at Texas Parks & Wildlife Dept to help raise community awareness.
- Focused on negative impacts associated with overabundant urban wildlife:
 - 1) Water quality concerns
 - 2) Deer/ traffic collisions
 - 3) Wildlife Health



Raising Awareness of Urban Wildlife Issues

- Public Meetings regarding Urban Wildlife
- Community Surveys
- City Council Workshops and Council Meeting Presentations
- Media- City media releases, worked w/ local newspaper, news interviews

CoNB Wildlife Feeding Ordinance

- In Sept 2018, NB City Council passed and approved an ordinance prohibiting the feeding of wildlife within the City limits (Ord No. 2018-58, City Code Section 82-25)
- The ordinance became effective March 10, 2019
- The ordinance prohibits the feeding of all wildlife on both public and private property
- 1st offense: warning, 2nd offense: fines \$75-500
- Exceptions: bird feeders hung at least 5ft above ground & Hunting Land Permit holders
- Enforcement: Park Rangers & Animal Control (Code Compliance)

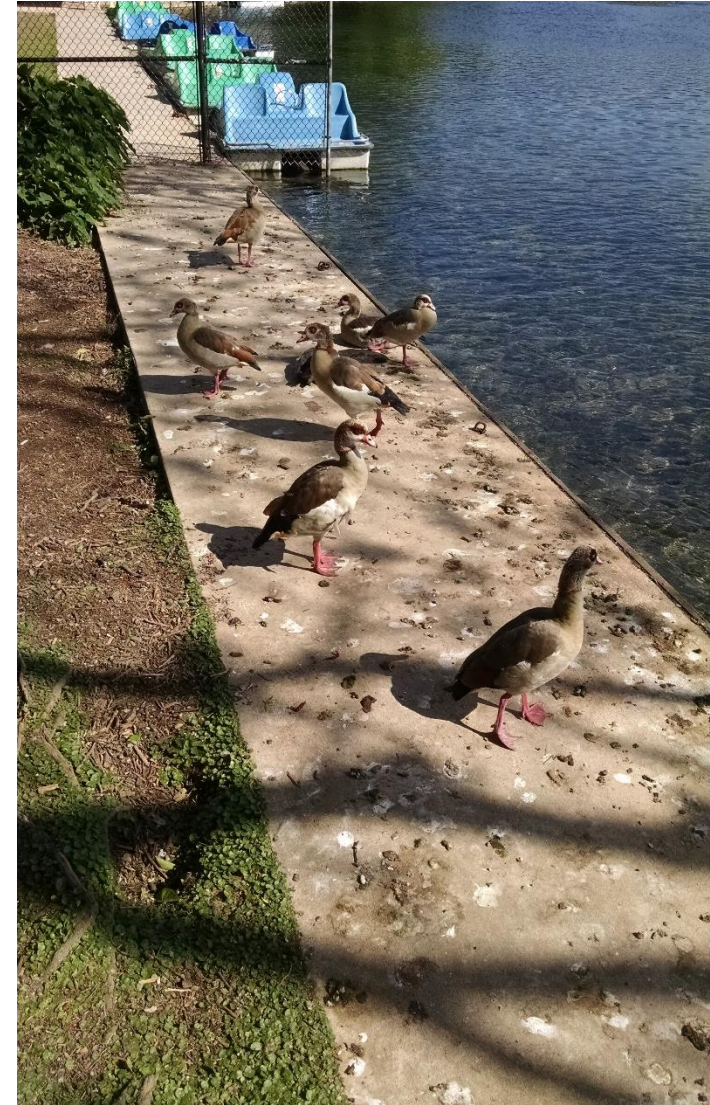
Wildlife Feeding Ordinance Signage



-Signage funded in part by the US Environmental Protection Agency through the Texas Commission on Environmental Quality

Misc WPP Wildlife Mgmt Activities

- Trapping of non-native waterfowl (i.e. Egyptian Geese, Muscovy Ducks) in Landa Park.
- Non-native waterfowl egg coating
- Distribution of informational flyers on negative impact of wildlife feeding.
- Wildlife Mgmt Workshops w/ TPWD



Education and Outreach

- Perform in-classroom presentations for elementary, middle and HS students at NBISD and Comal ISD schools
- Presentations to students
- Science curriculum training for teachers
- Outreach at community events
- Educational Video in local theatres, etc



Questions?

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