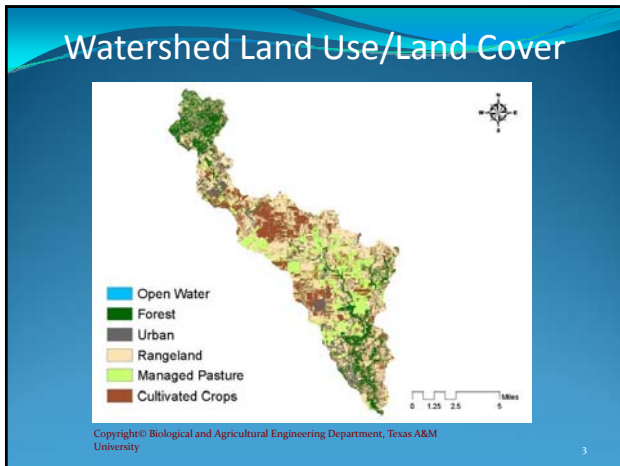


# Geronimo and Alligator Creeks Watershed Partnership Agricultural Work Group

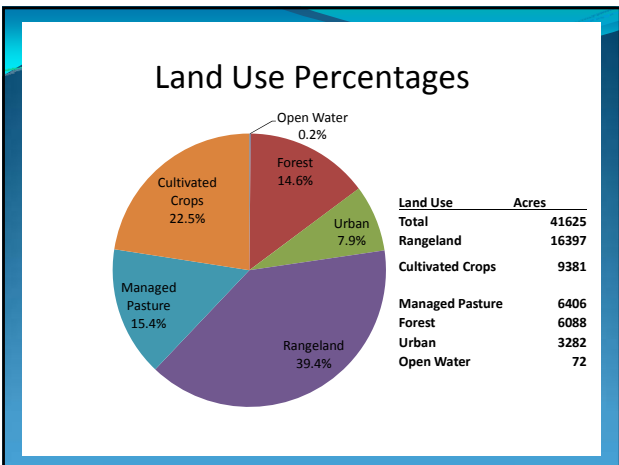
April 13, 2010

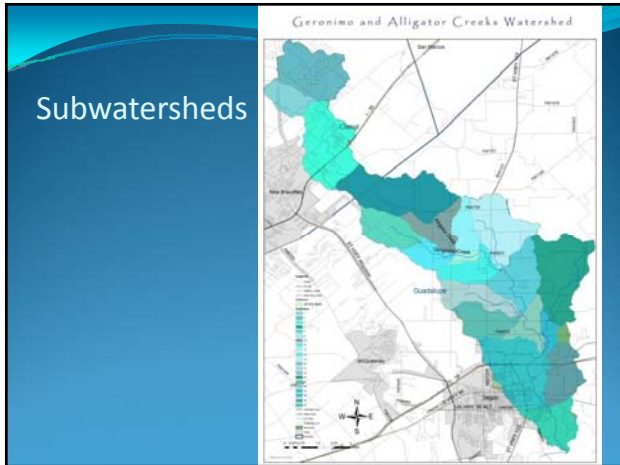
- ## Agricultural Work Group
- The purpose of this Work Group is to discuss the specific causes and sources of nonpoint source pollution stemming from general agricultural and silvicultural (forestry) sources.
  - This includes cropland, pastureland, rangeland, and forestland. Sources to be discussed include runoff from cropland, livestock, wildlife and feral hogs (invasive species).
  - This Work Group will also identify and recommend strategies to reduce and abate pollution from these sources.



- ## Land Use Definitions
- Open Water - All areas of open water, generally with less than 25% cover of vegetation or soil.
  - Urban- Includes areas with a mixture of some constructed materials, and lawn grasses. These areas most commonly include residential and commercial developments.
  - Forest - Areas dominated by trees generally greater than 15 feet tall, and greater than 50% of total vegetation cover, and areas adjacent to streams, creeks and/or rivers.

- ## Land Use Definitions continued
- Rangeland - Areas of unmanaged shrubs, grasses, or shrub-grass mixtures
  - Managed Pasture- Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops.
  - Cultivated Crops - Areas used for the production of annual crops, such as corn, soybeans, vegetables, and cotton, and also perennial crops such as orchards. This also includes all land being actively tilled.

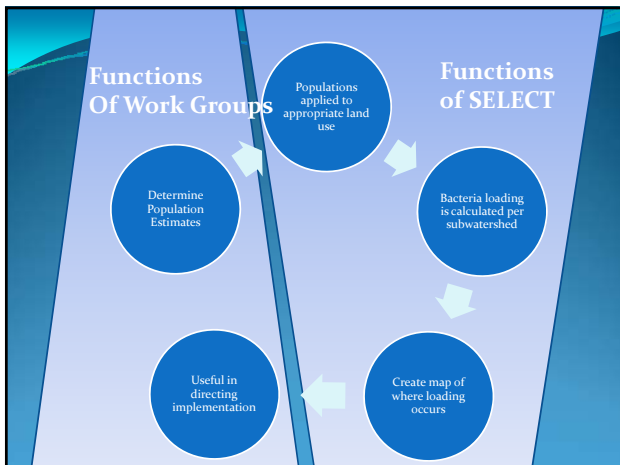




- ### Sources of Bacteria and/or Nitrogen
- Feral hogs
  - Livestock- cattle, goats, horses
  - Wildlife- deer, coyotes, raccoons, skunks, birds, migratory waterfowl, etc.
  - Fertilizer application
  - Illegal dumping

- ### Sources of Bacteria and Nitrogen with Data
- Feral hogs
  - Livestock- cattle, goats, horses
  - Deer
  - Fertilizer application (cropland)

- ### SELECT - How does this tool work?
- Stakeholders estimate the populations of each source that may be contributing bacteria or nutrients
  - Populations are then distributed across the watershed based on land use
  - Pollutant loading from each source is estimated based on average amounts produced/released by the sources
  - Subwatersheds with greatest potential can be identified



- ### Inputs Needed For SELECT
- Land use data
  - Potential sources (feral hogs, livestock, wildlife, septic systems)
  - Accurate estimates of populations (numbers) of each source

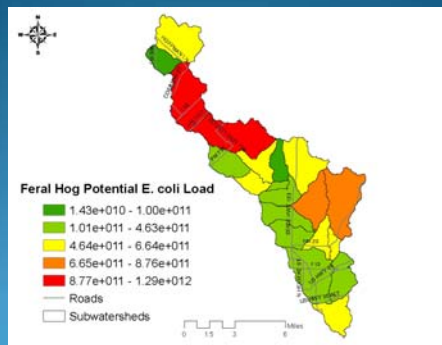
## SELECT Inputs

- Agriculture Work Group
  - Feral hog populations
  - Livestock: cattle, horse and goat populations
  - Wildlife populations (deer)
- Urban Work Group
  - Pet populations
  - Urban runoff
- Wastewater Work Group
  - Septic systems
  - WWTF data

## Feral Hogs

- The Work Group chose to:
  - Distribute feral hogs to all land uses except for urban and open water
  - Concentrate populations to riparian corridors
  - 25 animals per square mile (1 animal per 26 acres)
- Estimated watershed population: 1626

## Daily Potential *E. coli* loads resulting from Feral Hogs



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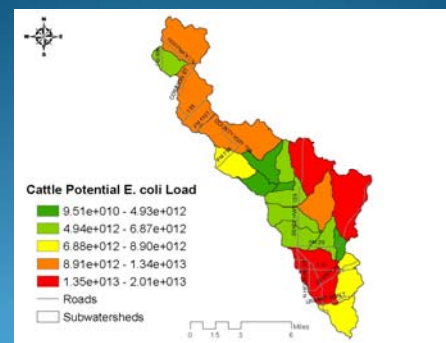
## Cattle Population Estimates

- Option 1: Density
  - Distribute cattle to appropriate land use categories (rangeland, forest)
  - Allocate 10 acres per head of cattle, based upon discussions with local NRCS and CEAs
  - Estimated population for the watershed is 2,248
- Option 2: NASS Population
  - USDA National Agricultural Statistics Service data
  - Take county populations and distribute to appropriate land uses
  - Estimated population for the watershed is 1,785

## Cattle

- The Work Group chose:
  - Option 1: Based on Density
    - Selected 10 acres per animal
  - To distribute cattle to:
    - Rangeland
    - Forest
    - Managed Pasture
- Estimated Watershed Population: 2889

## Daily Potential *E. coli* loads resulting from Cattle

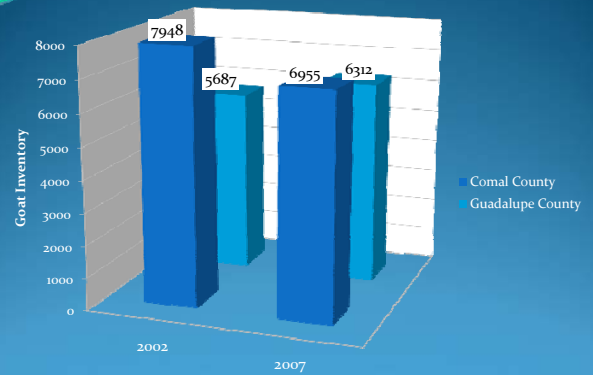


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## Goat Population Estimates

- Option 1: Density
  - Conversations with producers and County Extension Agents estimate the goat population at about 550 in the watershed
- Option 2: NASS Population
  - USDA National Agricultural Statistics Service data
  - Take county populations and distribute to appropriate land uses
  - Estimated population for the watershed is 364

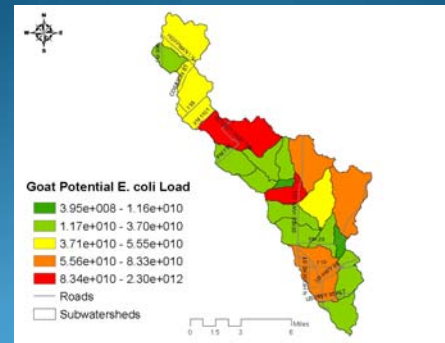
## County Goat Populations



## Goats

- The Work Group chose to:
  - locate 150 in Subwatershed 4
  - locate 300 in Subwatershed 10
  - 100 evenly distributed around entire watershed
    - Land Use
      - Rangeland
      - Forest
      - Managed Pasture
- Estimated Watershed Population: 550

## Daily Potential *E. coli* loads resulting from Goats

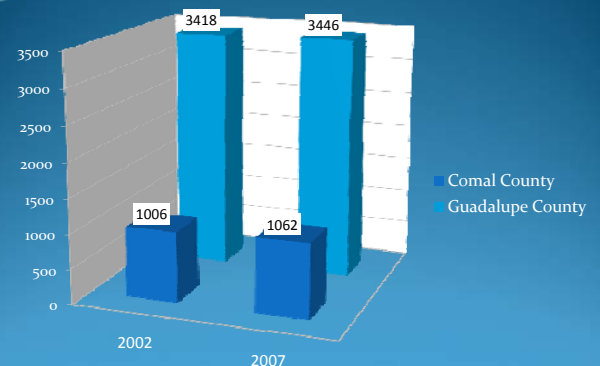


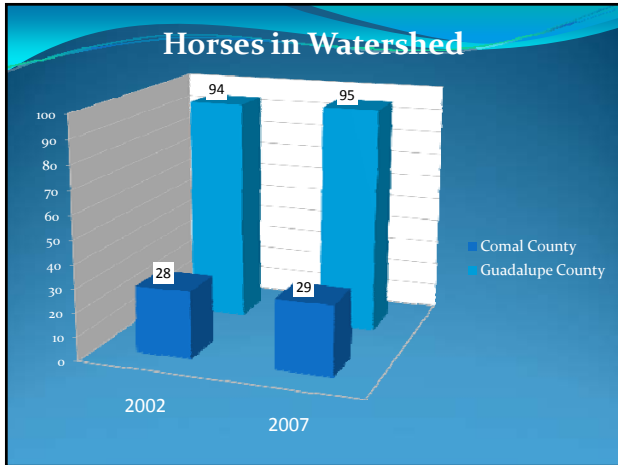
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## Horses

- Option 1 Density
  - Distribute to appropriate land use categories (rangeland, forest)
  - Estimated population for the watershed would be based on a selected density
- Option 2 NASS Population
  - USDA National Agricultural Statistics Service data
  - Take county populations and distribute to appropriate land uses
  - Estimated population for the watershed is 124

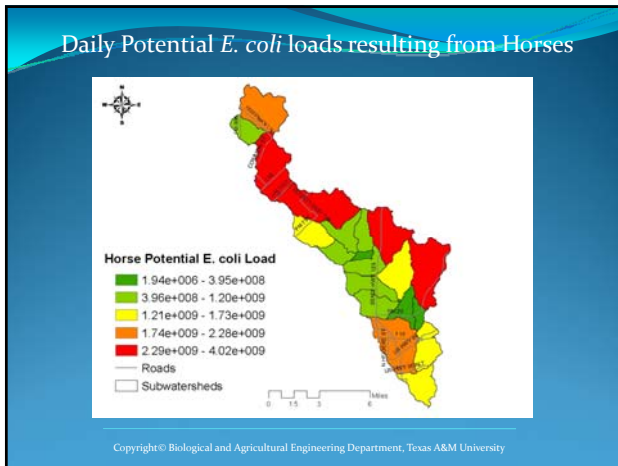
## Horses in Counties





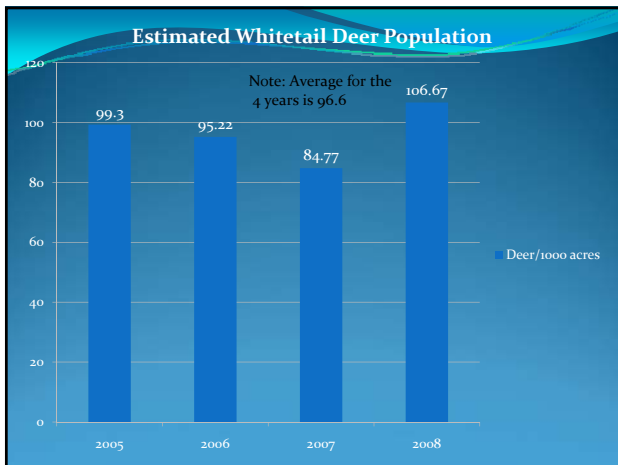
### Horses

- The Work Group chose Option 2:
  - Use the NASS population as the basis for the estimate for the watershed
  - Results in a density of 132 acres per animal
  - Distribute horses to:
    - Rangeland
- Estimated Watershed Population: 124



### Deer Population Estimates

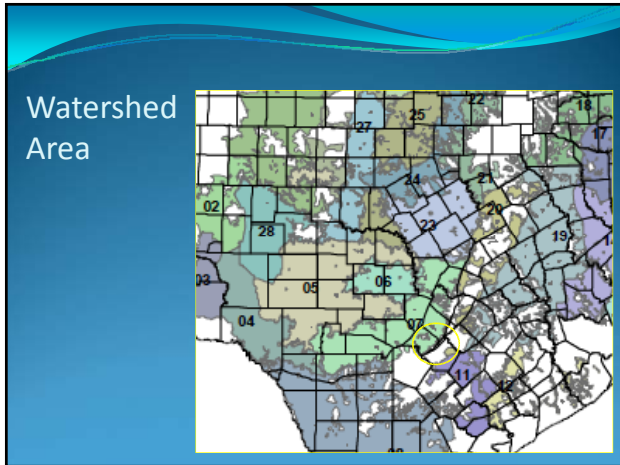
- Estimate was provided by TPWD deer census information (Lockwood, 2008)
- Allocate about 10 acres per deer
  - 2005 to 2008: 99.8 deer, 95.2 deer, 84.7 deer, and 106.7 deer/1000 acres
  - Average is 96.6 deer/1000 acres
- Estimated population for the watershed 2,172
- Distribute deer to appropriate landuse categories



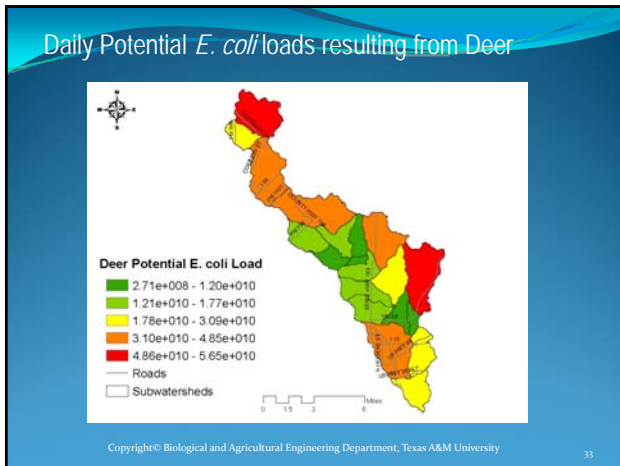
### Monitored Deer ranges within the Resource Management Units of Texas

Figure 1. Monitored deer range within the Resource Management Units (RMU) of Texas.

RMU	Area (sq mi)
20	781,142
21	387,820
22	771,071
23	1,430,807
24	1,008,818
25	1,552,348
26	594,404
27	1,182,609
28	1,021,388
4	3,028,328
5	2,807,841
6	881,886
7	1,000,010
8	1,245,028
13	949,342
14	1,706,690
16	882,822
18	1,006,147
17	735,582
11	850,818
12	476,323
18	1,200,481
18	2,226,747
8	6,029,878
3	815,502
3	625,025
30	4,223,231
81	1,620,188
Total	38,557,788



- ### White-Tailed Deer
- The Work Group chose to:
    - Use the TPWD estimate
      - Average of the previous 4 years
      - Density of 10 acres per animal
    - Distribute them to:
      - Forest
      - Rangeland
  - Estimated Watershed Population: 2172



- ### Next Steps
- May 11<sup>th</sup> Watershed Tour
  - May 11<sup>th</sup> Partnership Meeting
  - Drafting Background materials for the WPP