



**Savannah River
National Laboratory**™

OPERATED BY SAVANNAH RIVER NUCLEAR SOLUTIONS

We put science to work.™

Wild Pigs on the SRS – An Update

SRS CAB Presentation

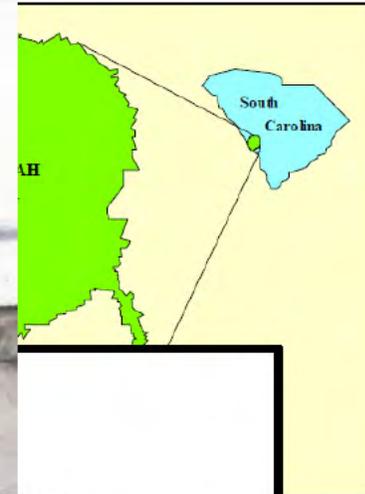
Dr. Jack Mayer

Jul. 29, 2019

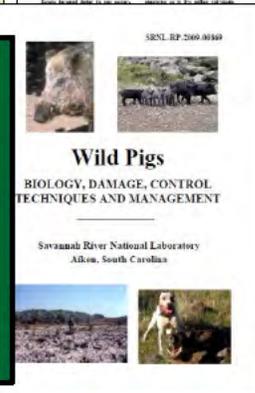


Wild Pigs of the Savannah River Site

- Best studied population of wild pigs in the United States
- Presentations
 - 13 Theses
 - 3 Books
 - 35 Peer-reviewed articles
 - 14 Publications
 - 23 Conferences
 - 84 Technical reports
- Management
- Control
- Future Programs



Abstracts
 Chapters



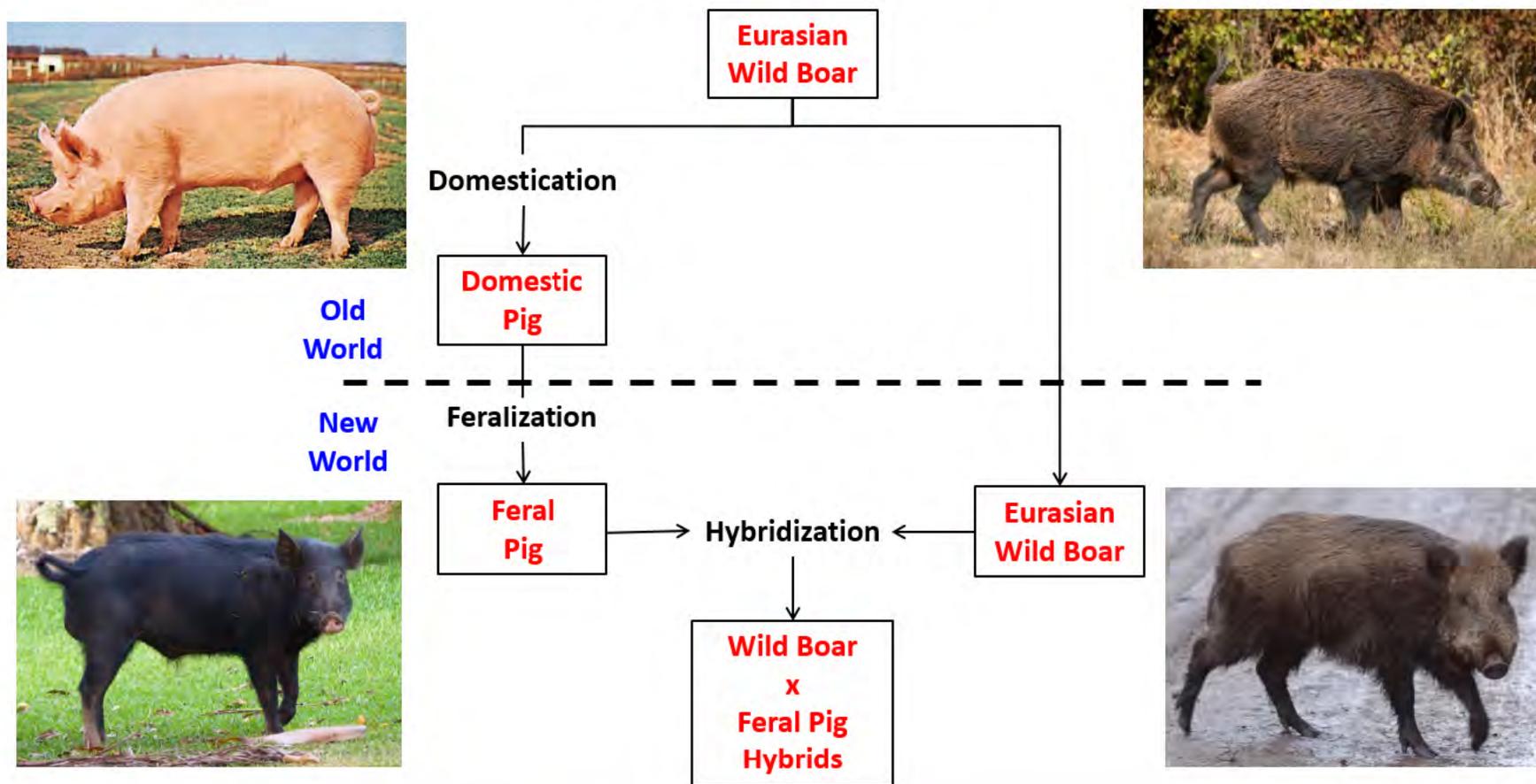
Small text block, likely a caption or reference for the pig image.



Wild Pigs of the Savannah River Site

Wild Pig Classification Basics

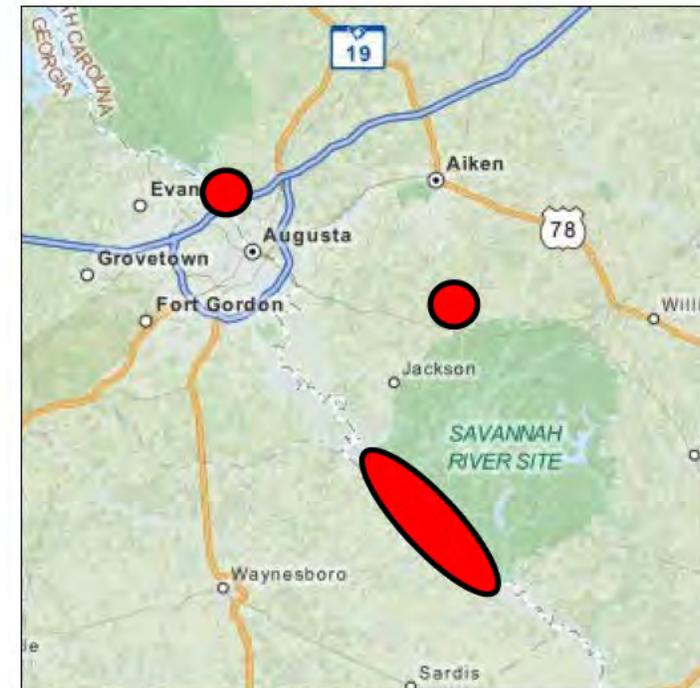
Sus scrofa



Wild Pigs of the Savannah River Site

History of the Population:

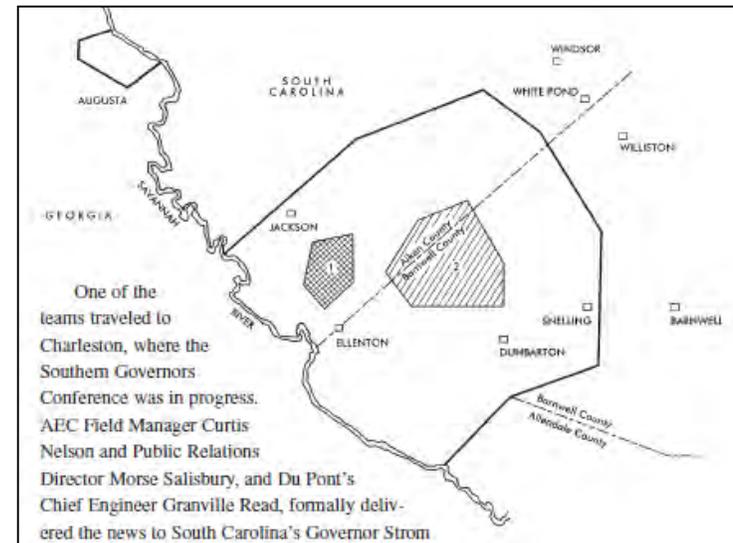
- De Soto expedition crossed CSRA in 1540
- First domestic pigs brought to South Carolina colonies in 1566
- Free-ranging of domestic pigs a common practice in Colonial South Carolina
 - Reported in New Windsor in the 1750s
 - Reported as common in the riverswamp up through the late 1940s



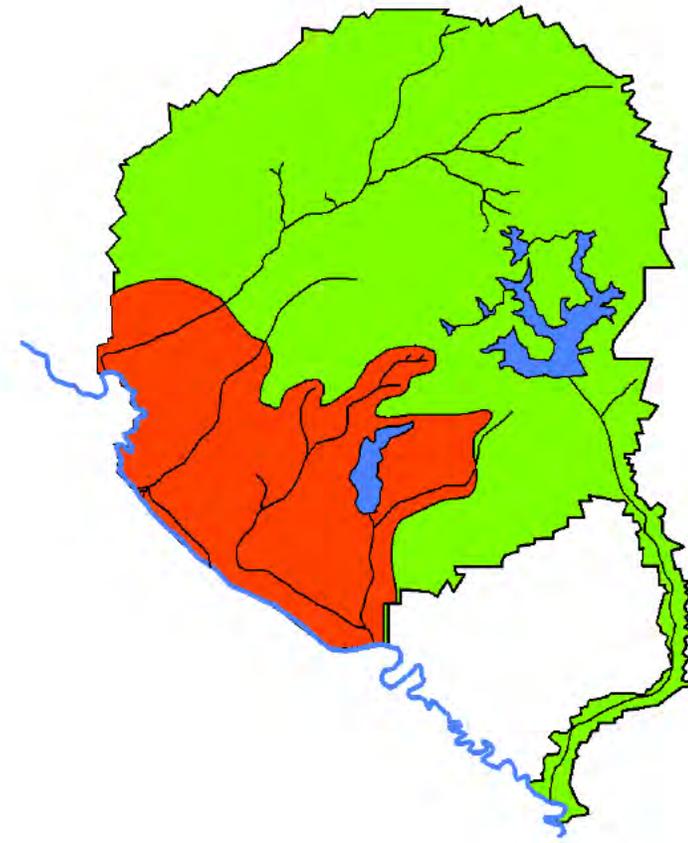
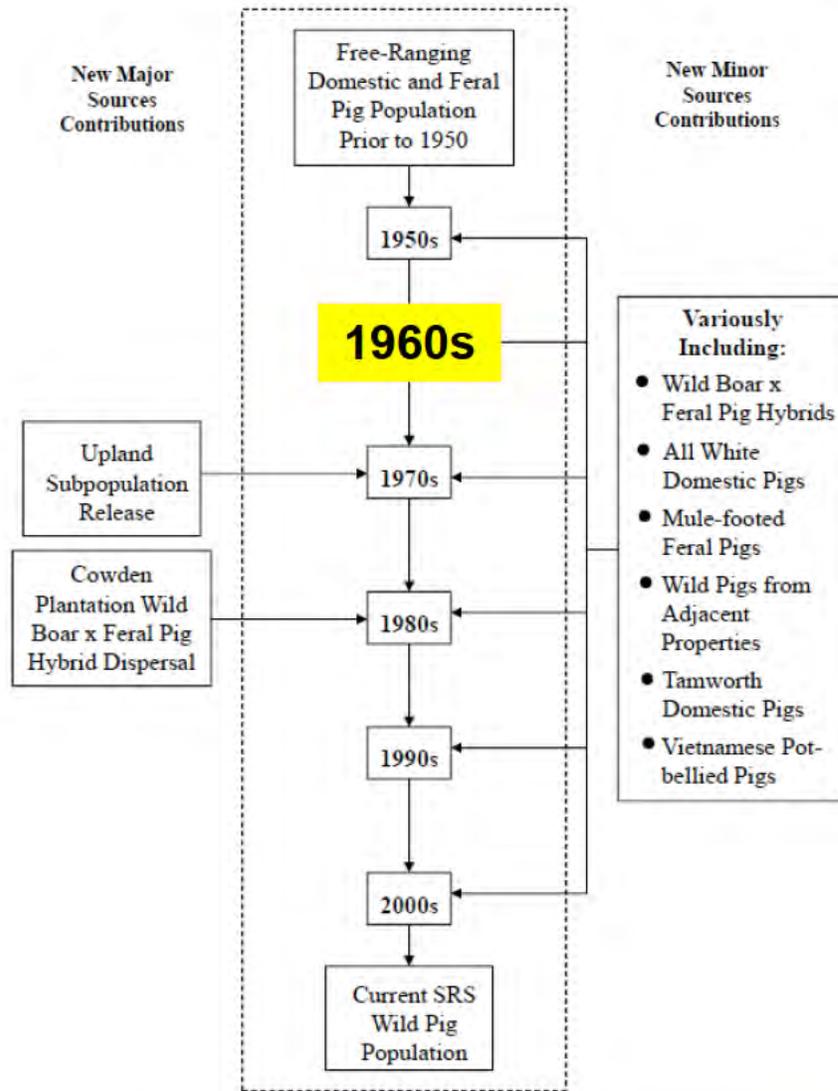
Wild Pigs of the Savannah River Site

History of the Population:

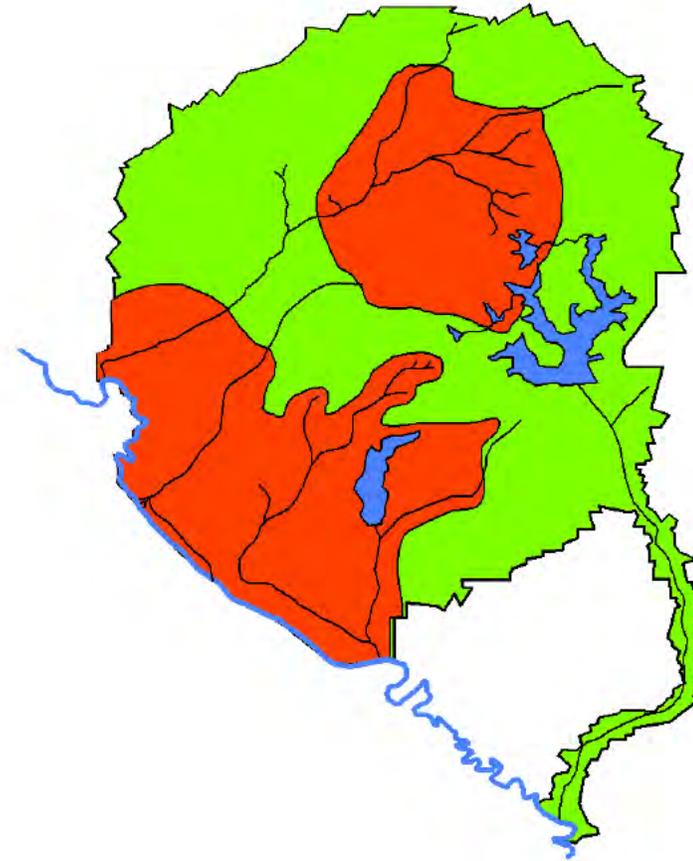
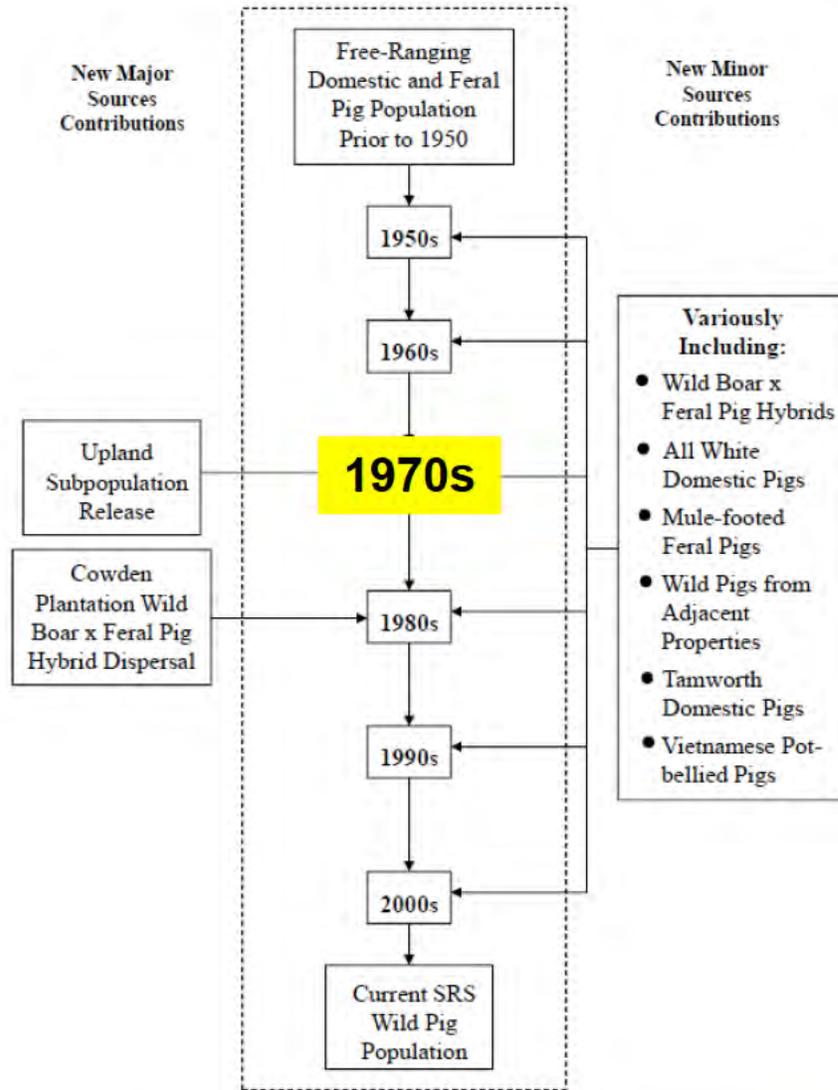
- Feral pigs were reported to be present as of 1940s
- Federal government acquired land in 1950
- Farmers given one year to remove free-range livestock
- One former landowner claimed to have lost over 100 pigs that could not be recovered
- All free-ranging pigs onsite in 1952 formed the founding stock of present-day population



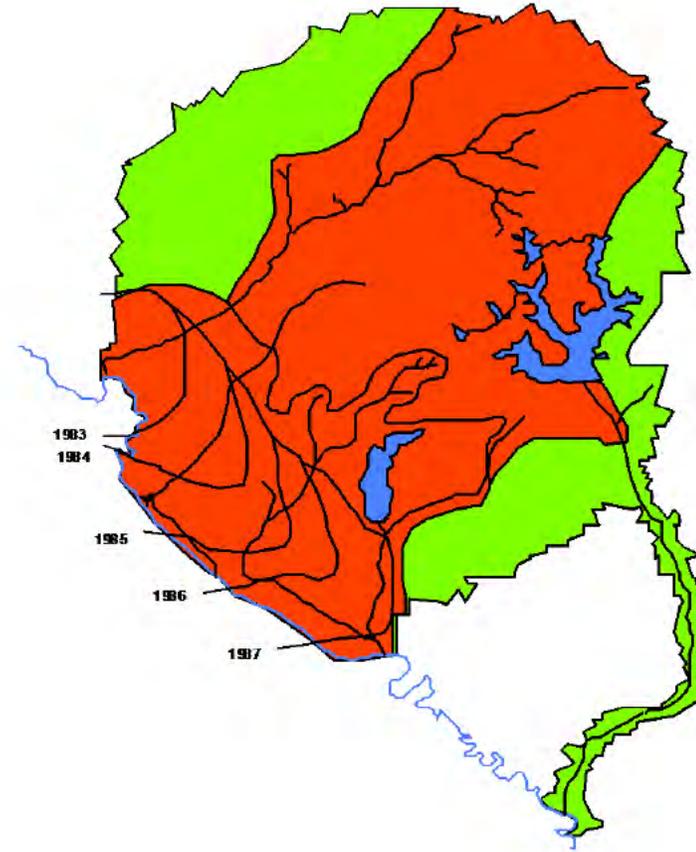
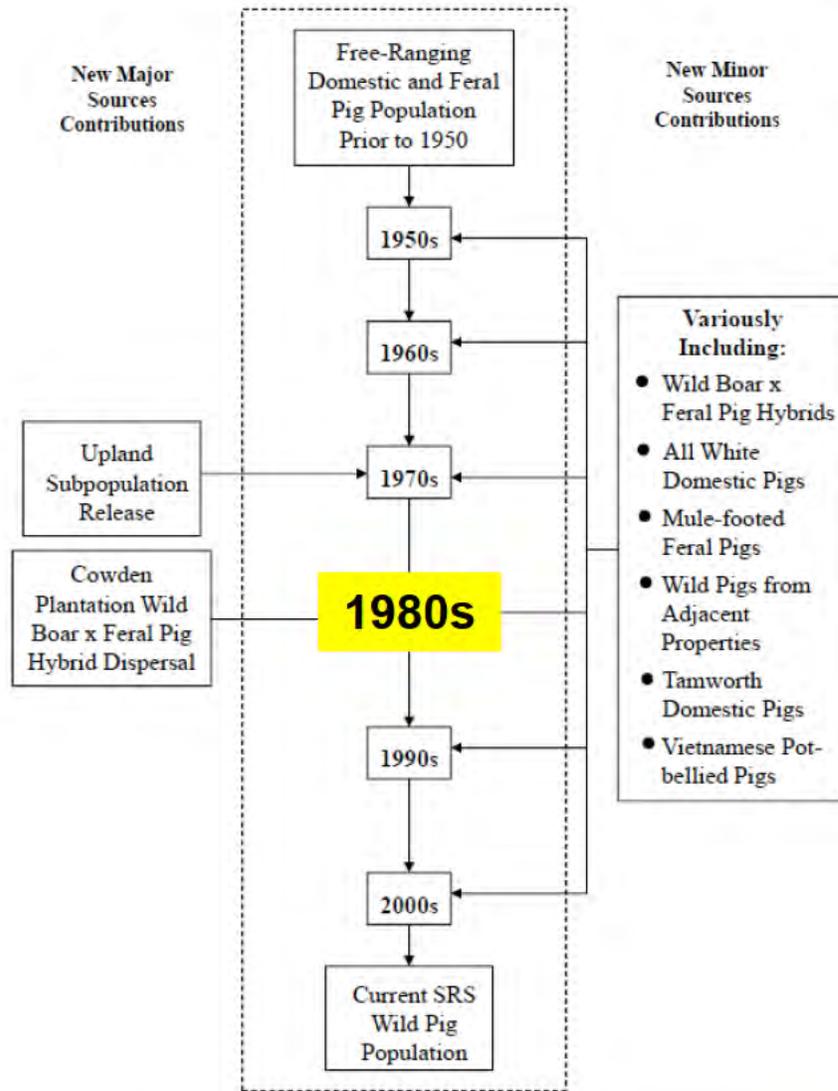
Wild Pigs of the Savannah River Site



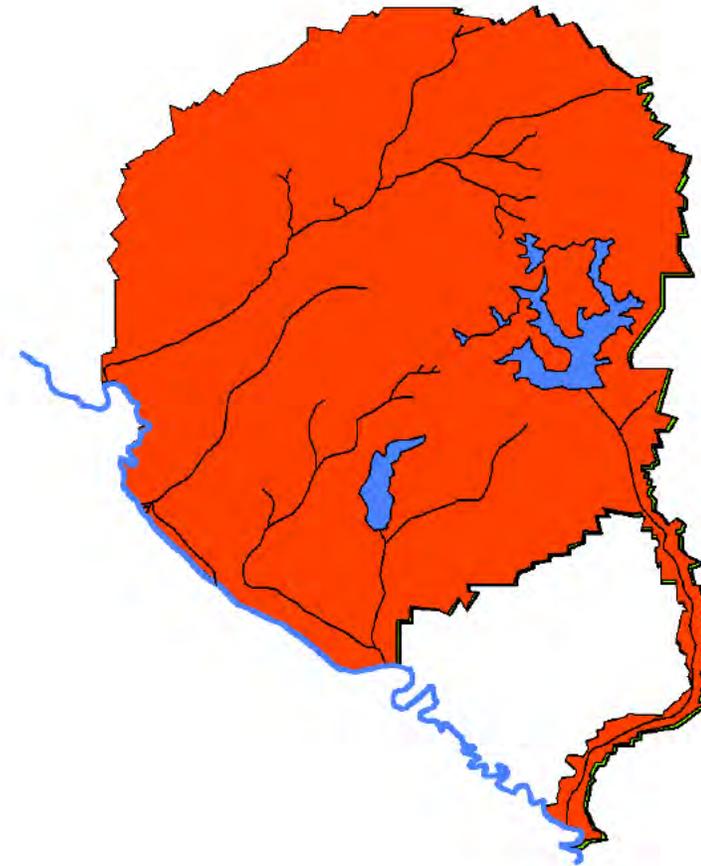
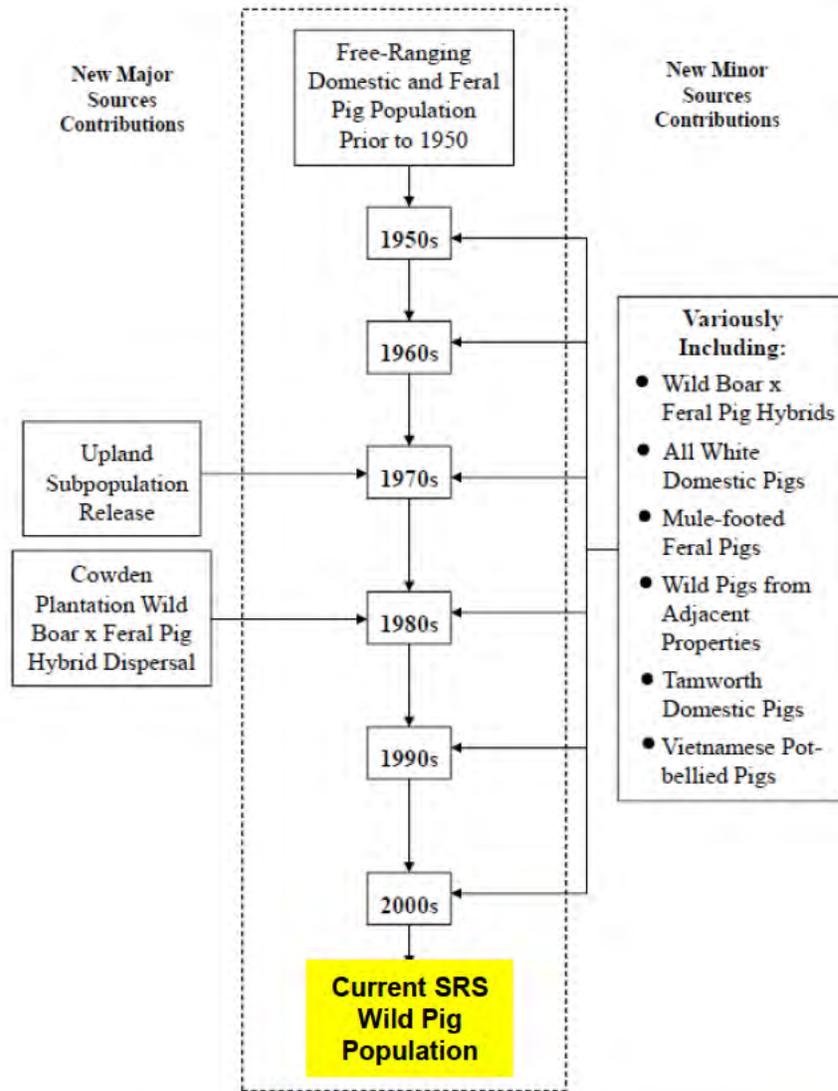
Wild Pigs of the Savannah River Site



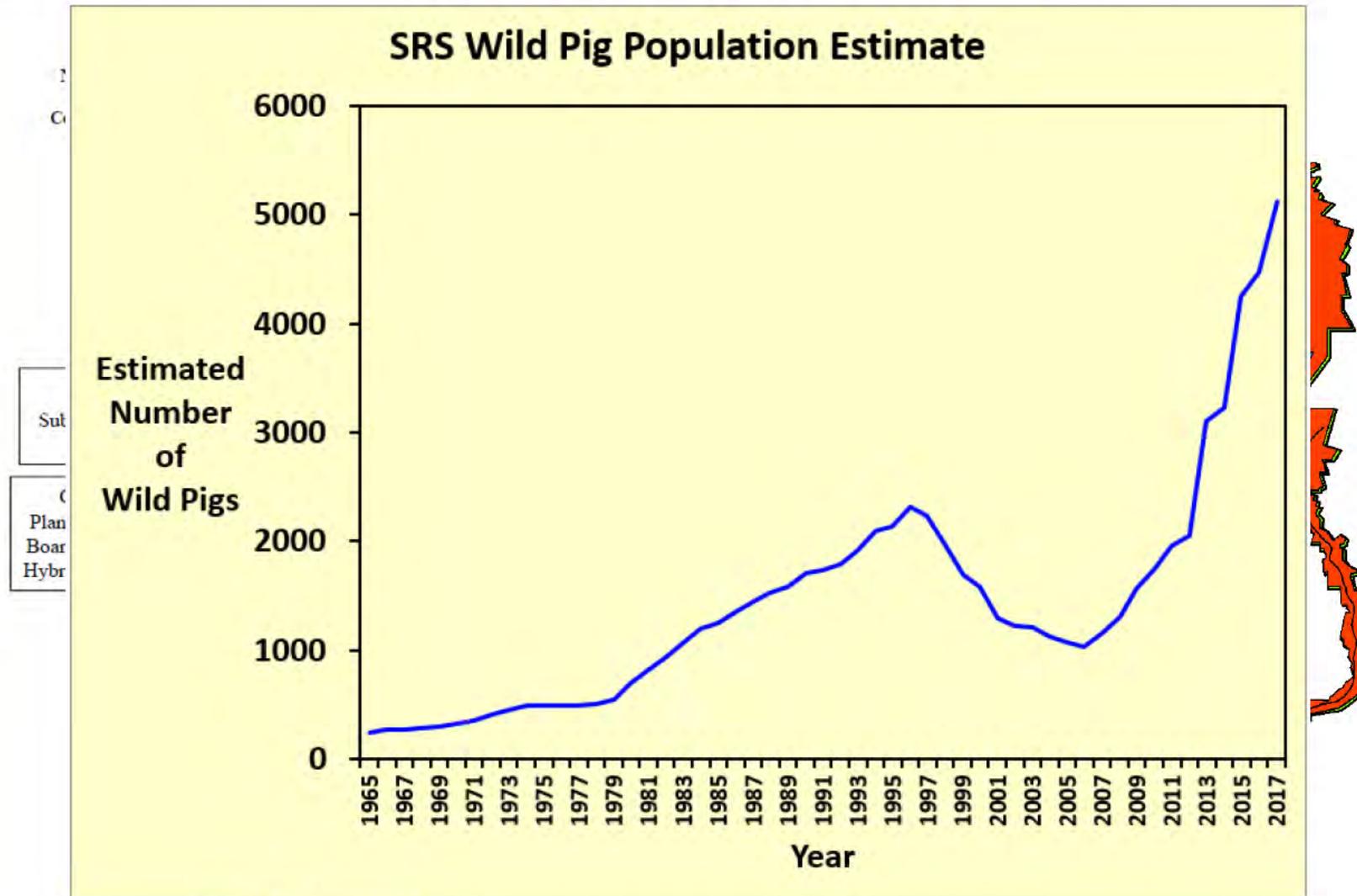
Wild Pigs of the Savannah River Site



Wild Pigs of the Savannah River Site



Wild Pigs of the Savannah River Site



Wild Pigs of the Savannah River Site

Physical Characteristics

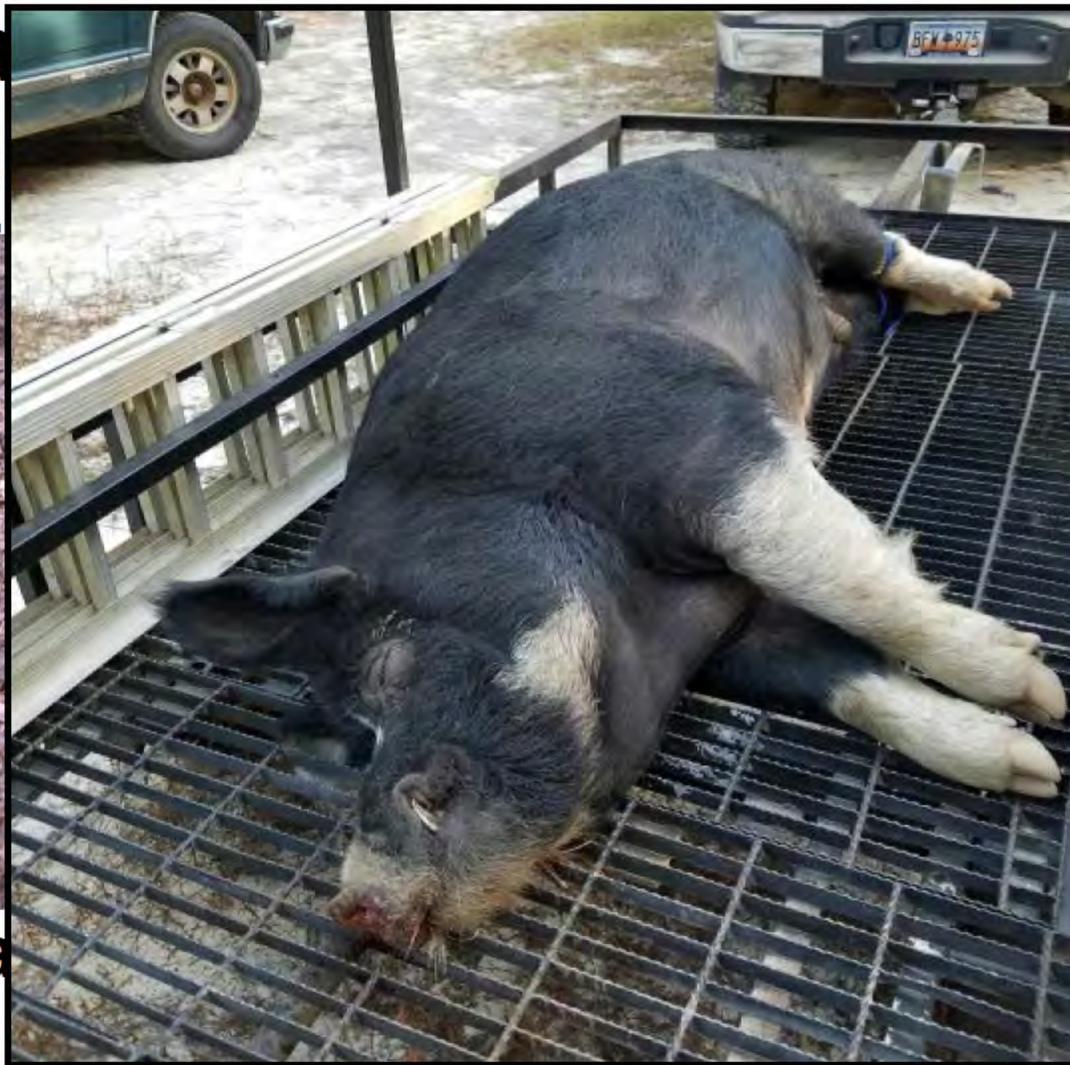
- Males are significantly larger and heavier than females
- Average adult weights:
 - Males – 201 lbs. (Max = 450 lbs.)
 - Females – 174 lbs.
 - Born at <2 pounds
- Average adult total length
 - Males – 5.6 ft (Max = 6.8 ft)
 - Females – 5.3 ft
- Average adult shoulder height
 - Males – 30 in (Max = 37 in)
 - Females – 27 in



Wild Pigs of the Savannah River Site

Physical

- Males are and head
- Average
 - Males –
 - Females
 - Born at
- Average
 - Males –
 - Females
- Average a
 - Males – 30
 - Females – 27 in



Wild Pigs of the Savannah River Site

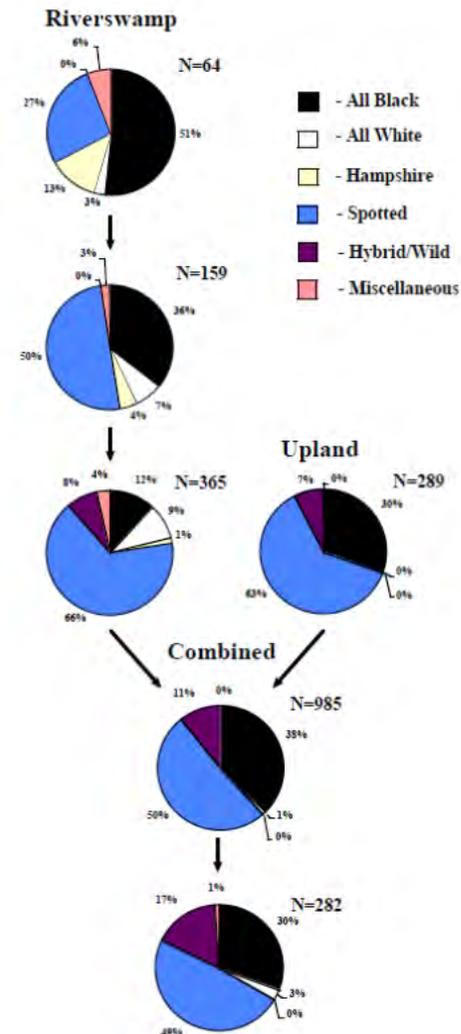
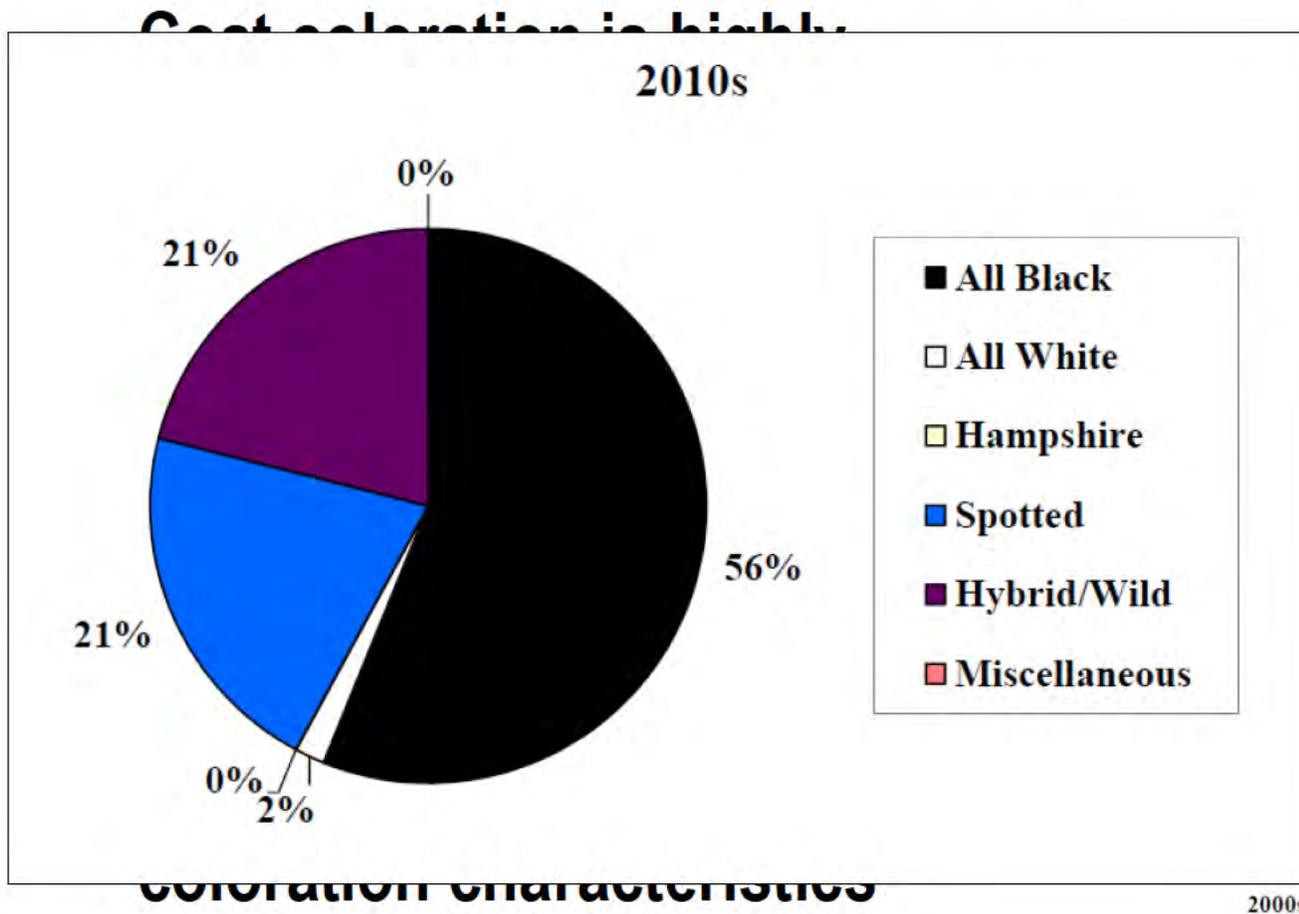
Physical Characteristics

- Coat coloration is highly variable (e.g., solid, spotted, belted, etc.)
- Chronological coloration frequencies have been observed
- Most recent studies point toward a high Eurasian wild boar coat coloration characteristics



Wild Pigs of the Savannah River Site

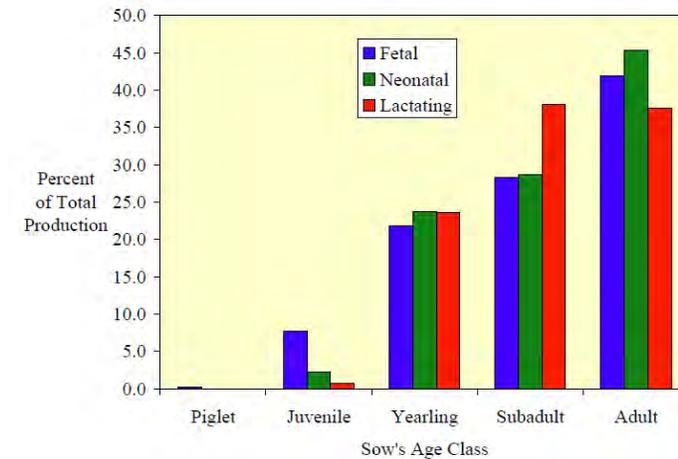
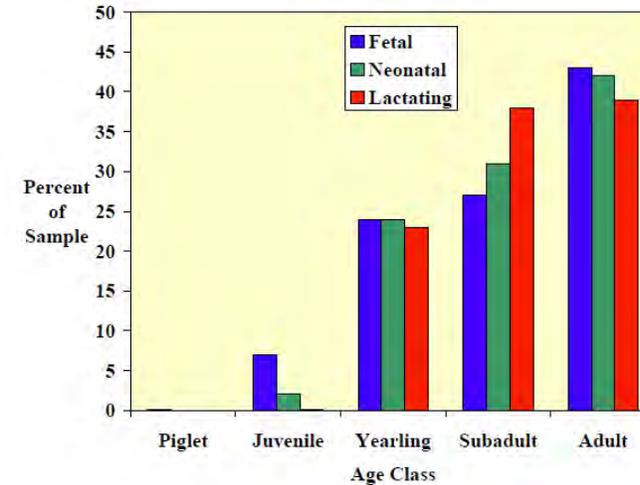
Physical Characteristics



Wild Pigs of the Savannah River Site

Reproductive Biology

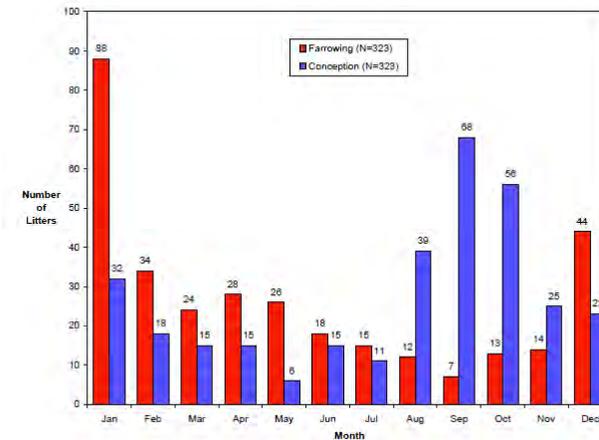
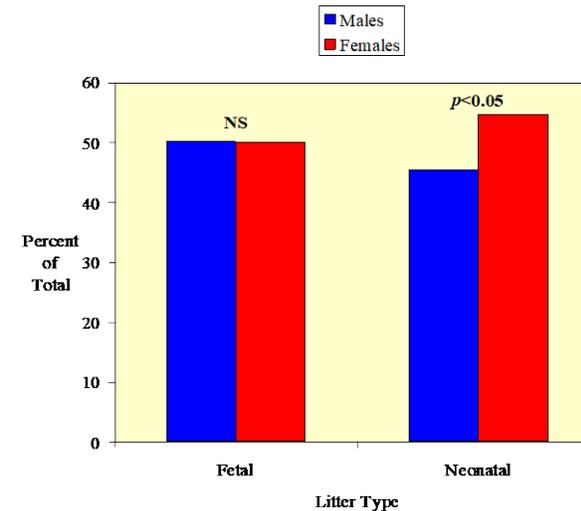
- Litter size
 - Fetal - mean = 6.2 (1 to 14)
 - Neonatal - mean = 5.4 (1 to 12)
 - Post-natal - mean = 4.3 (1 to 10)
 - Lactation - mean = 5.9 (2 to 12)
- Can breed as young as:
 - Sows - 3 months of age
 - Boars - 4 months of age
- Female participation in breeding increases with age
 - Number of sows breeding
 - Number of offspring produced



Wild Pigs of the Savannah River Site

Reproductive Biology

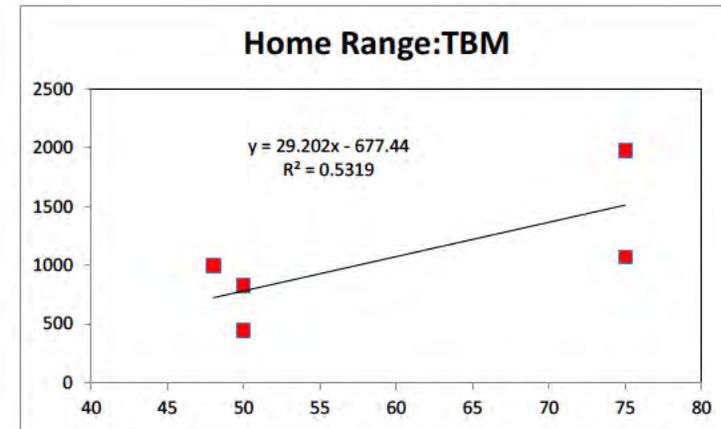
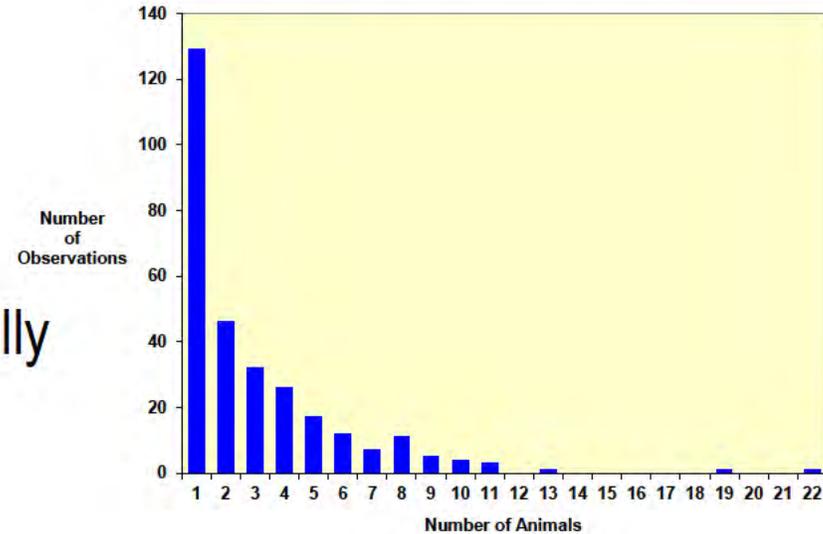
- Sex ratio varies between fetal and neonatal litters
- Sows can breed year-round
 - Peak of conception - Aug-Oct
 - Peak of farrowing - Dec-Feb
 - Secondary peaks
 - *Conception* - Jan
 - *Farrowing* - Apr-May
- 7% of the sows produce two litters per year



Wild Pigs of the Savannah River Site

Behavior

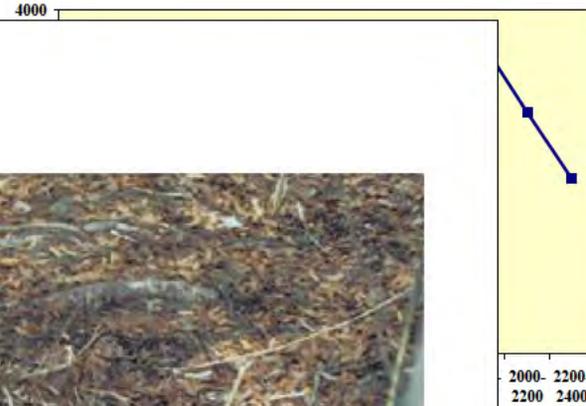
- **Social unit organization -**
 - Mostly groups of 2 or more (59%)
 - Solitary animals (41%); mostly sexually mature males
- **Home range –**
 - Mean = 4 mi² (1 to 9 mi²)
 - HR size increases positively with weight
- **Habitat use –**
 - Year-round (YR) preference for bottomland hardwoods
 - YR % Hardwood:Pine Use – 58:42



Wild Pigs of the Savannah River Site

Behavior

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Wild Pigs of the Savannah River Site

Behavior

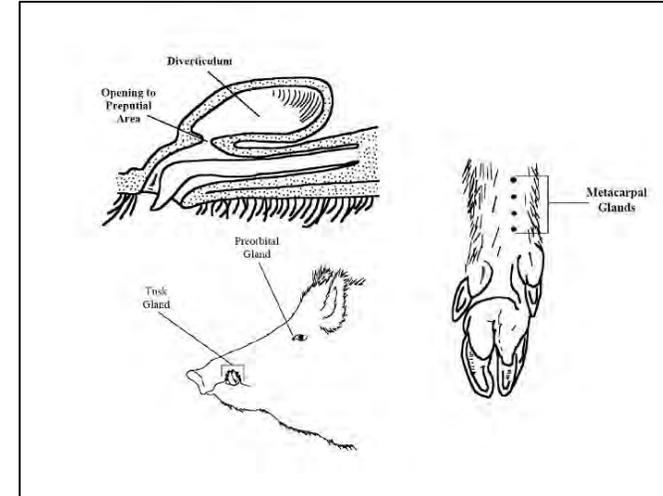
- Daily activity pattern -
 - Primarily diurnal
 - Two activity peaks
- Construction of structures –
 - Farrowing nests
 - Resting/loafing beds
- Use of wallows/rubs –
 - Year-round use
 - Body temperature
 - Lice/tick control



Wild Pigs of the Savannah River Site

Behavior

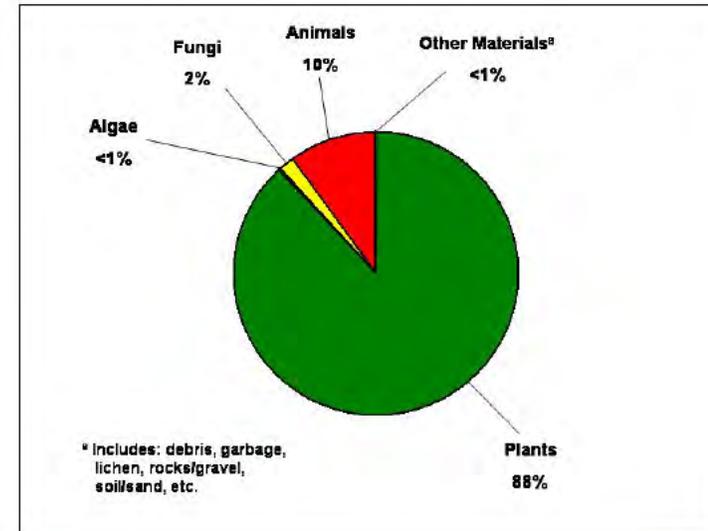
- Scent marking glands-
 - Three primary types
 - *Metacarpal* – males & females
 - *Tusk* – males only
 - *Preputial*- males only
 - Mostly done by mature males
 - Dominance function between males
 - Territoriality?



Wild Pigs of the Savannah River Site

Food Habits

- Wild pigs are classified as opportunistic omnivores
- To date, 38 specific items identified as being consumed on SRS
- Typical composition of diet:
 - 88% plant matter
 - 10% animal matter
 - 2% fungi
 - <1% misc. (e.g., soil, rocks, sticks, garbage)



Wild Pigs of the Savannah River Site

Damage

- **Variety of damage done on SRS**
 - Rooting damage
 - Forestry depredation
 - Vehicle collisions
 - Property damage
 - Potential disease impacts
 - Attacks on humans
 - Contaminant uptake



Wild Pigs of the Savannah River Site

Damage

- **Rooting damage**
 - Destabilization of surface soils
 - Erosion
 - Sedimentation
 - Habitat alteration
 - Soil chemistry/nutrient cycling
 - Combined with wallowing can impact water quality in wetland habitats
 - Recent increase in wild pigs in developed areas onsite
 - Safety hazard



Wild Pigs of the Savannah River Site

Damage

- Root
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- Ero
- Sec
- Hab
- Soil
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- Rec
- dev
- Safety hazard



Wild Pigs of the Savannah River Site

Damage

- Rooting
- Destabilization
- Erosion
- Sedimentation
- Habitat degradation
- Soil compaction
- Contamination of surface water
- Recreational areas and developed areas onsite
- Safety hazard



Wild Pigs of the Savannah River Site

Damage

- Rooting damage



- Combined with wallow water quality in wetland
- Recent increase in wild pig activity in developed areas onsite
- Safety hazard



Wild Pigs of the Savannah River Site

Damage

- Root damage
- Destruction of vegetation
- Erosion
- Secondary damage
- Habitat destruction
- Soil compaction
- Contamination of water
- Reduced productivity of developed areas
- Safety hazard



Wild Pigs of the Savannah River Site

Damage

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- Safety hazard



Wild Pigs of the Savannah River Site

Damage

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Wild Pigs of the Savannah River Site

Damage

- Forest resource damage
 - Damage to pine seedlings started in the early 1950s; feed on the grass stage of longleaf pine
 - Also dig up and consume the root stock of planted hardwood seedlings
 - Chew on lateral roots of mature pines
 - Girdle trees through rubbing
 - Tusk up trees while marking with tusk glands



Wild Pigs of the Savannah River Site

Damage

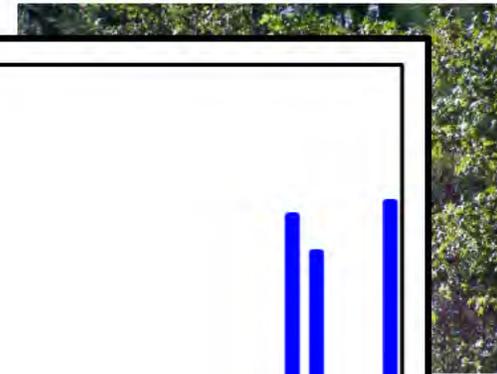
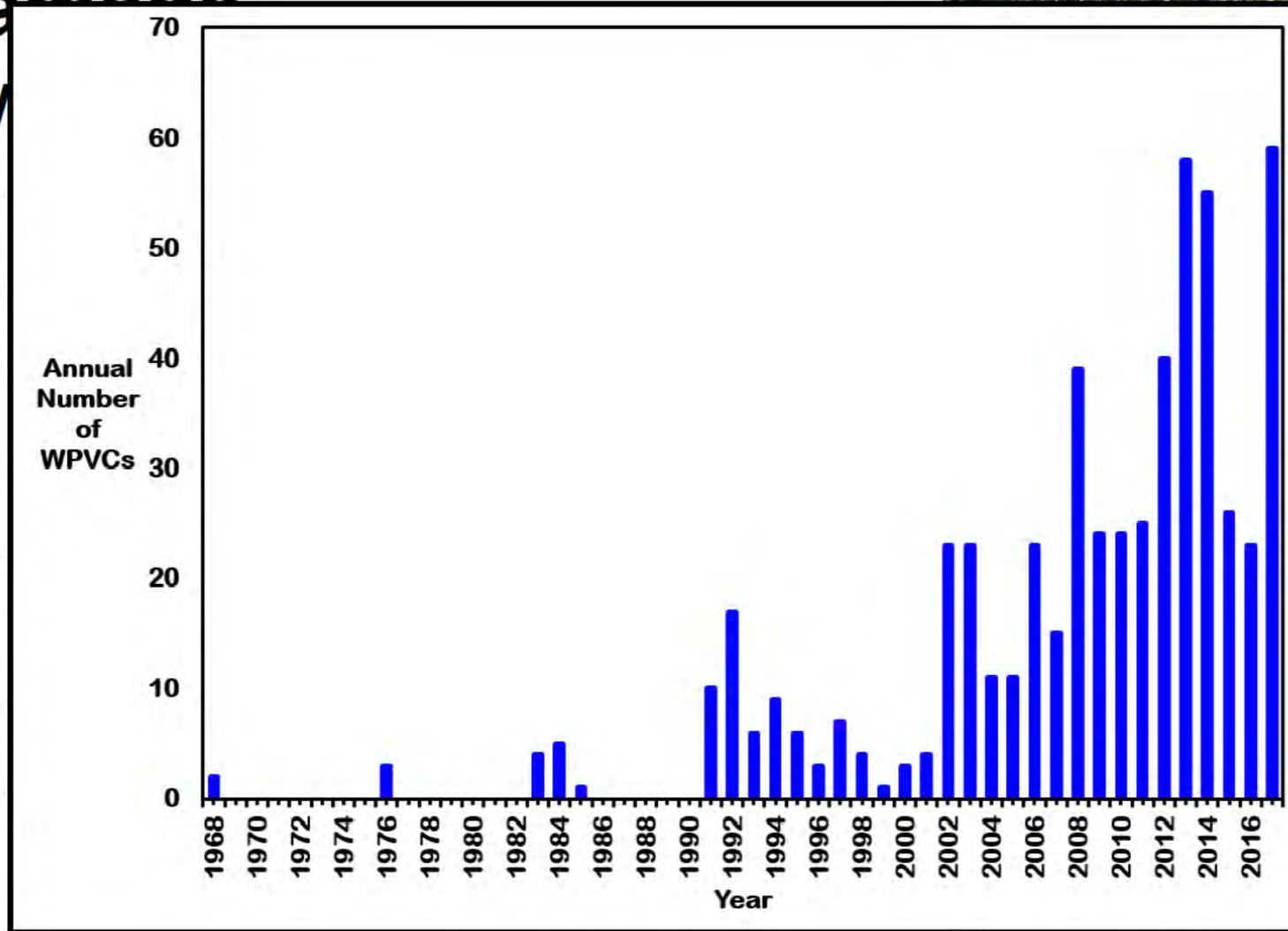
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Wild Pigs of the Savannah River Site

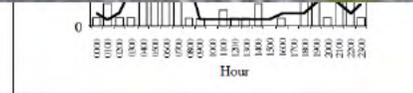
Damage

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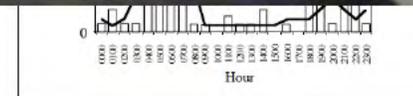
Wild Pigs of the Savannah River Site

Damage



Wild Pigs of the Savannah River Site

Damage



Wild Pigs of the Savannah River Site

Damage

- **Property damage**
 - Variety of damage to property
 - Punctures to basin liners
 - Frequent impacts to fences
 - Scientific field instruments, etc.

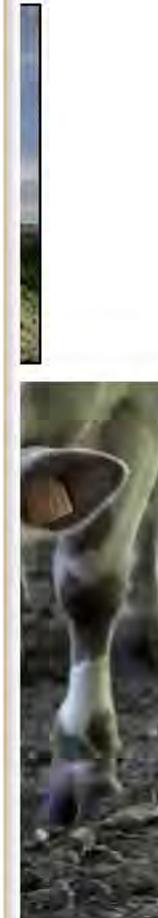


Wild Pigs of the Savannah River Site

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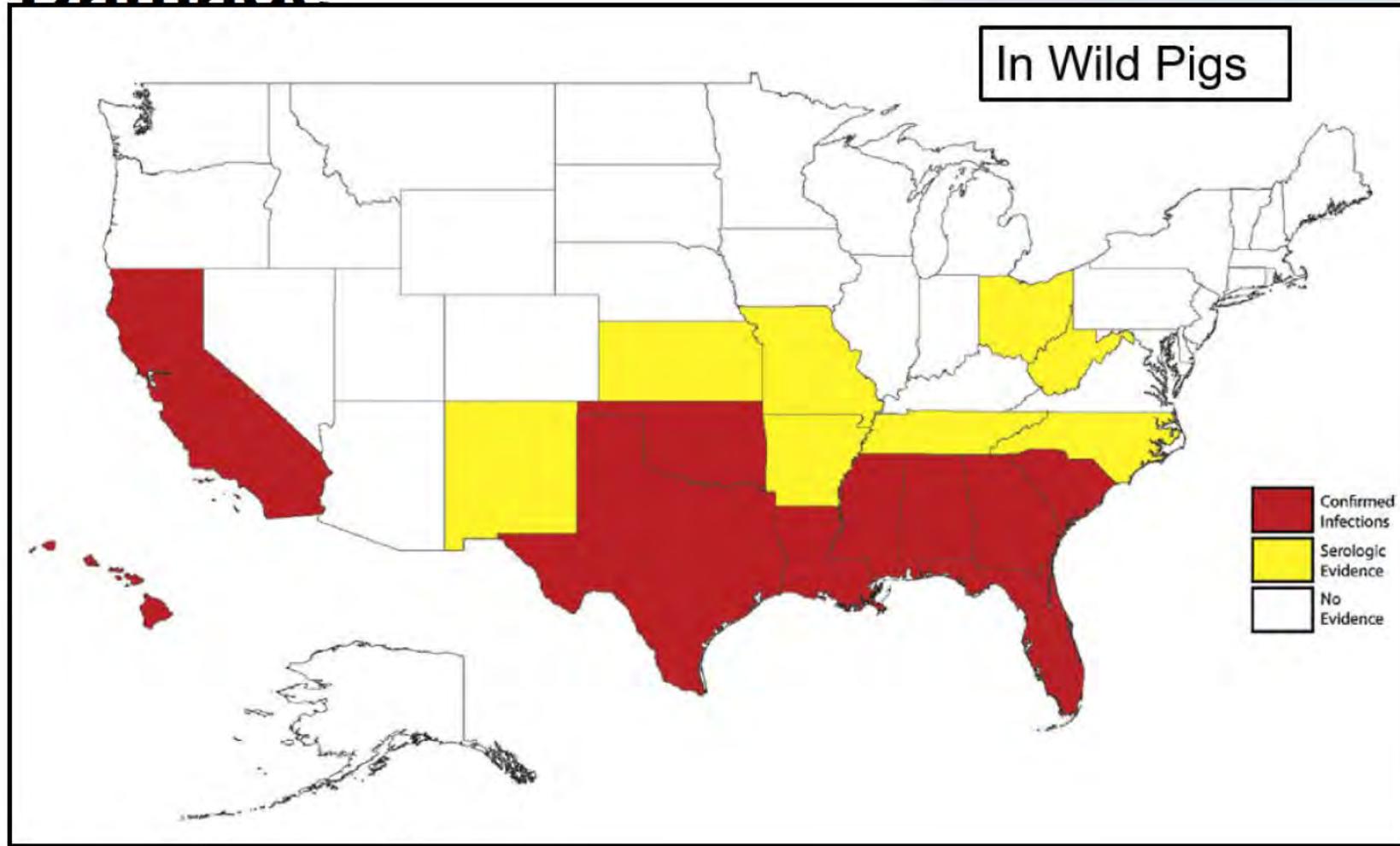
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- African swine fever
- Anthrax
- Avian tuberculosis
- Bovine herpesvirus
- Brucellosis (various)
- Bubonic plague (yersiniosis)
- Chlamydiosis
- Classical swine fever (i.e., hog cholera)
- Coronaviral infections
- Cysticercosis
- Echinococcosis
- Encephalomyocarditis
- Erysipelothrix infections
- Escherichia coli
- Foot-and-mouth disease
- Helicobacter spp.
- Hepatitis E
- Influenza viruses (various)
- Japanese encephalitis
- Leptospirosis
- Louping-ill virus
- Malignant catarrhal fever
- Melioidosis
- Menangle virus
- Papillomavirus infections
- Parainfluenza virus
- Pasteurellosis
- Pestivirus infections
- Porcine circovirus
- Porcine Dermatitis Nephropathy Syndrome (PDNS)
- Porcine encephalomyelitis
- Porcine enterovirus
- Porcine Reproductive and Respiratory Syndrome (PRRS)
- Postweaning Multisystemic Wasting Syndrome (PMWS)
- Pseudorabies virus (Aujeszky's disease)
- Q-fever
- Rabies
- Reovirus
- Rinderpest
- Salmonellosis
- San Miguel sea lion virus
- Sarcoptic mange
- Sparganosis
- Streptococcus suis
- Swinepox virus
- Toxoplasmosis
- Transmissible gastroenteritis
- Trichinosis
- Tuberculosis (unspecified)
- Tularemia
- Venezuelan equine encephalitis
- Vesicular exanthema
- Vesicular stomatitis



Wild Pigs of the Savannah River Site

Damage



ocular exposure)



Wild Pigs of the Savannah River Site

Damage

- Swine Brucellosis
 - Clinical symptoms include flu-like symptoms
 - Duration can vary from weeks to years
 - No definite cure exists
 - Treatment with multiple antibiotics is needed for extended periods of time
 - Prevention through PPE



Wild Pigs of the Savannah River Site

Damage

- **Attacks on humans**
 - Such attacks do occur
 - Rare
 - Potentially very serious consequences
 - Both hunting and non-hunting circumstances
 - A few on the SRS
 - No unprovoked attacks by wild pigs onsite



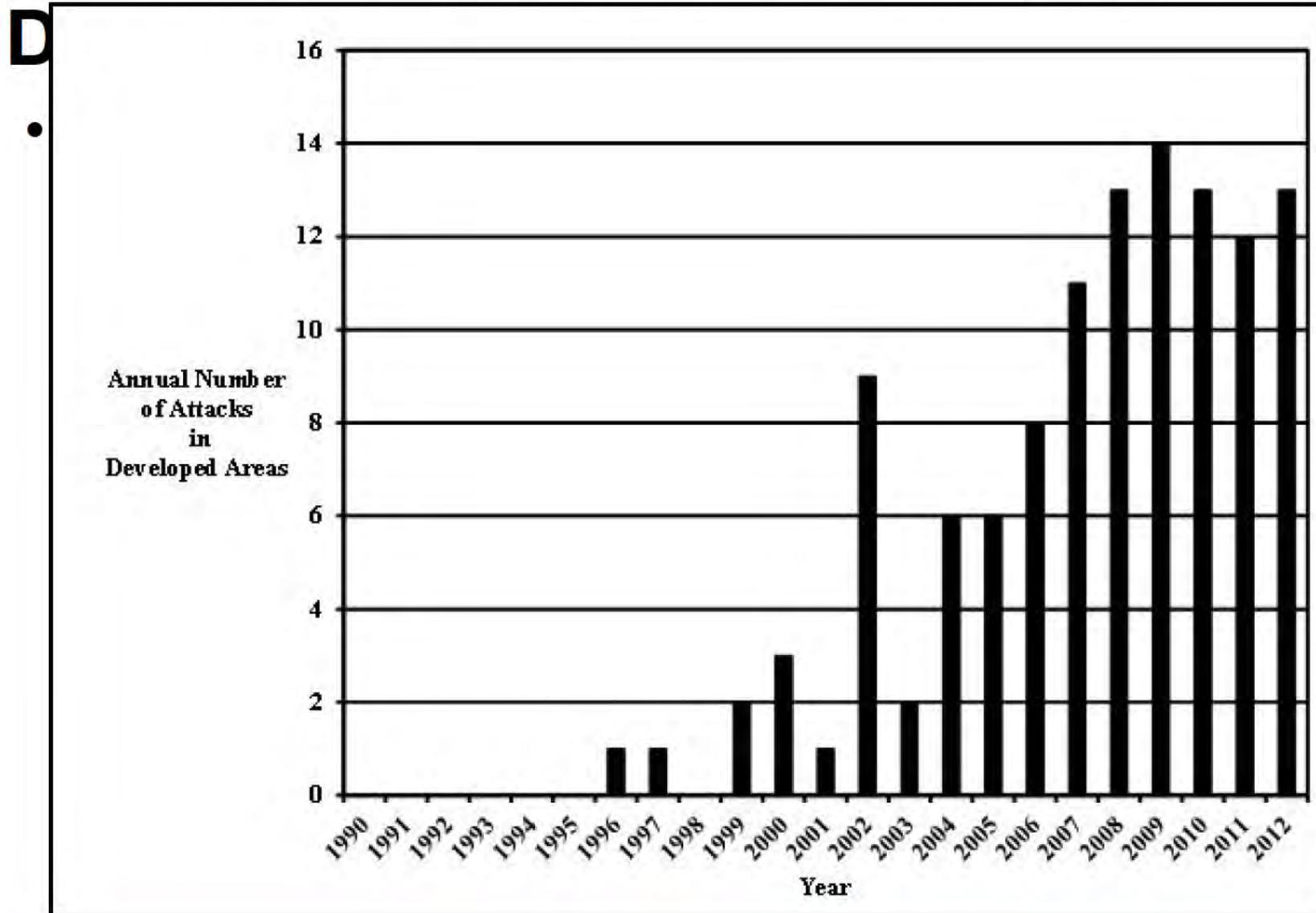
Wild Pigs of the Savannah River Site



wild pigs onsite



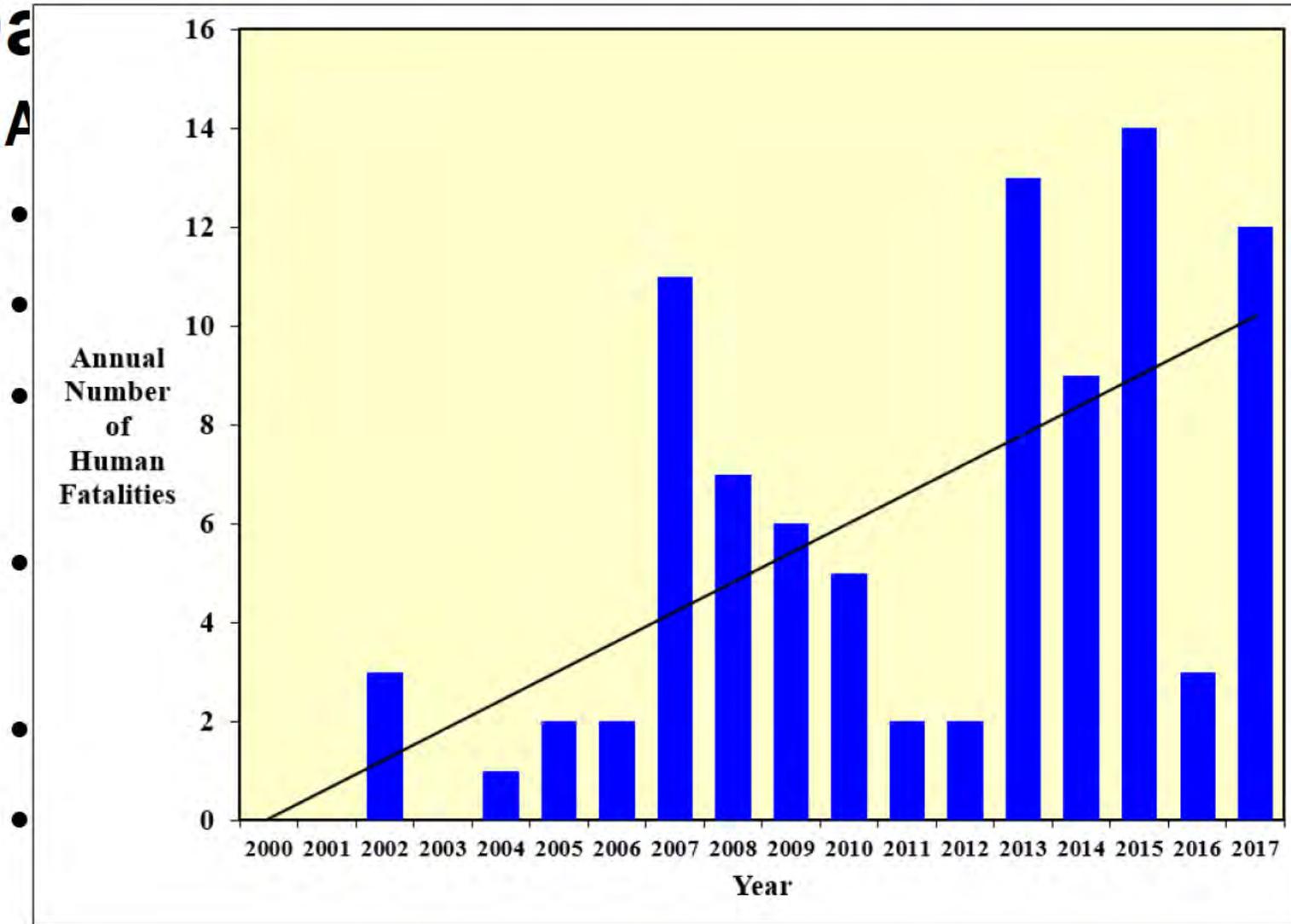
Wild Pigs of the Savannah River Site



Wild Pigs of the Savannah River Site

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Wild Pigs of the Savannah River Site

Damage

Worldwide Scoreboard

2007-2017 Fatal Attacks on Humans

Sharks/All Species - **64**

Wild Pigs/1 Species - **84**

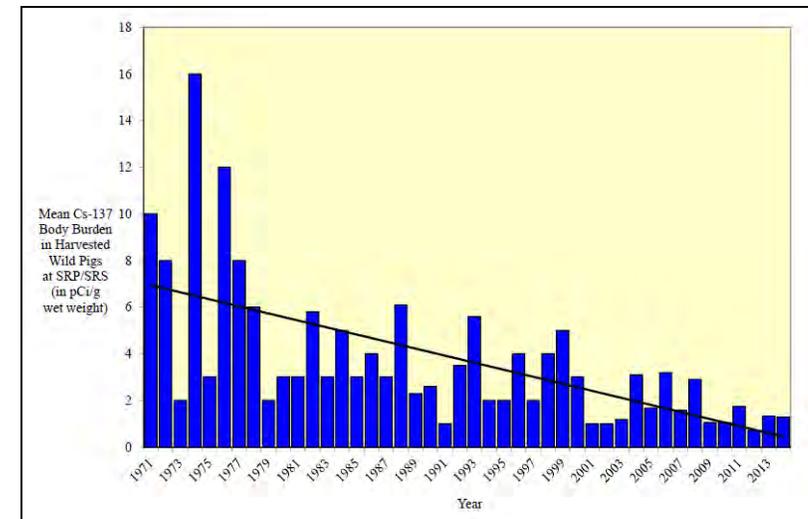
wild pigs onsite



Wild Pigs of the Savannah River Site

Damage

- Contaminate Uptake
 - SRS wild pigs monitored for radionuclides and metals as far back as late 1960s
 - Primarily Cs¹³⁷ and Sr⁹⁰
 - Highest in warm months when wild pigs are in the bottomland hardwoods
 - Cs¹³⁷ body burden in wild pigs onsite dropping since the early 1970s



Wild Pigs of the Savannah River Site

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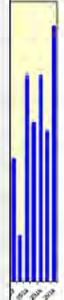
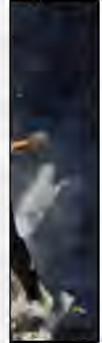
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The State Columbia, S.C.

MAXIM OFF THE WALL

COULD BE GOOD HUNTIN' - I HEAR THEY GOT A BIG HOG PROBLEM 'ROUND THESE PARTS...

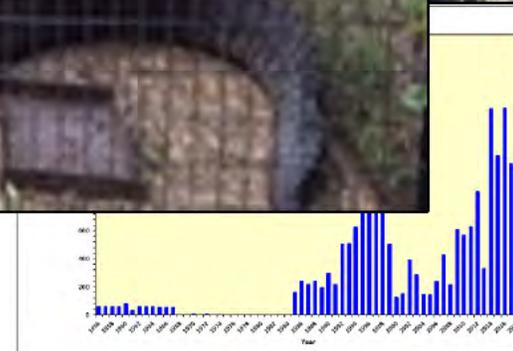


Wild Pigs of the Savannah River Site

Management and Control

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- US
- Continued up through the present
- 1956-2018 Total Harvest = 20,257+

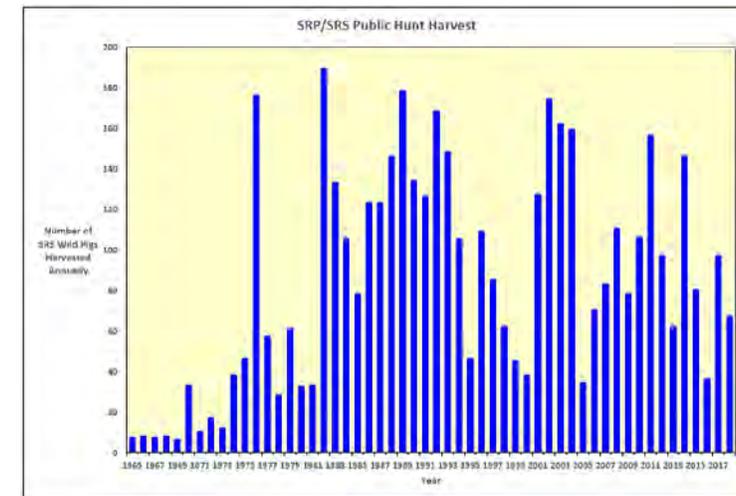


Wild Pigs of the Savannah River Site

Management and Control

Lethal Removal:

- Public hunts began in 1965 to control expanding SRP deer herd
- Hunters also allowed to shoot wild pigs
- Two special SRS wild hog hunts
 - Used trained hog dogs
 - Held in Jan 2001 and Jan-Feb 2003
- 1965-2018 Total Harvest = 4,564



Wild Pigs of the Savannah River Site

Management and Control

Lethal Removal:

- UGA/SREL research collection of SRP/SRS wild pigs
- Began in 1968
- 1968-1992 Total Harvest = 345
- SCWMRD/SCDNR control shooting of SRP/SRS wild pigs on wild turkey food plots
- Began in 1972
- 1972-1985 Total Harvest = 212



Wild Pigs of the Savannah River Site

Management and Control

Lethal Removal:

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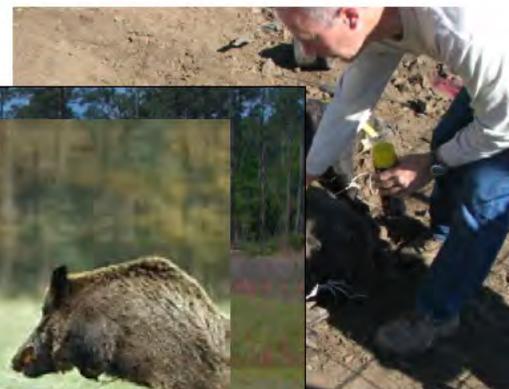
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- Several SRS closed waste sites in 2014 through the present



Wild Pigs of the Savannah River Site

Future Projections

- No foreseeable significant decrease in population size or distribution
- Continued need for lethal removal
- Continued need to fence some areas (e.g., waste site closure caps)
- Increase in studies by SREL and USFS-SR to improve control methods



Wild Pigs of the Savannah River Site

