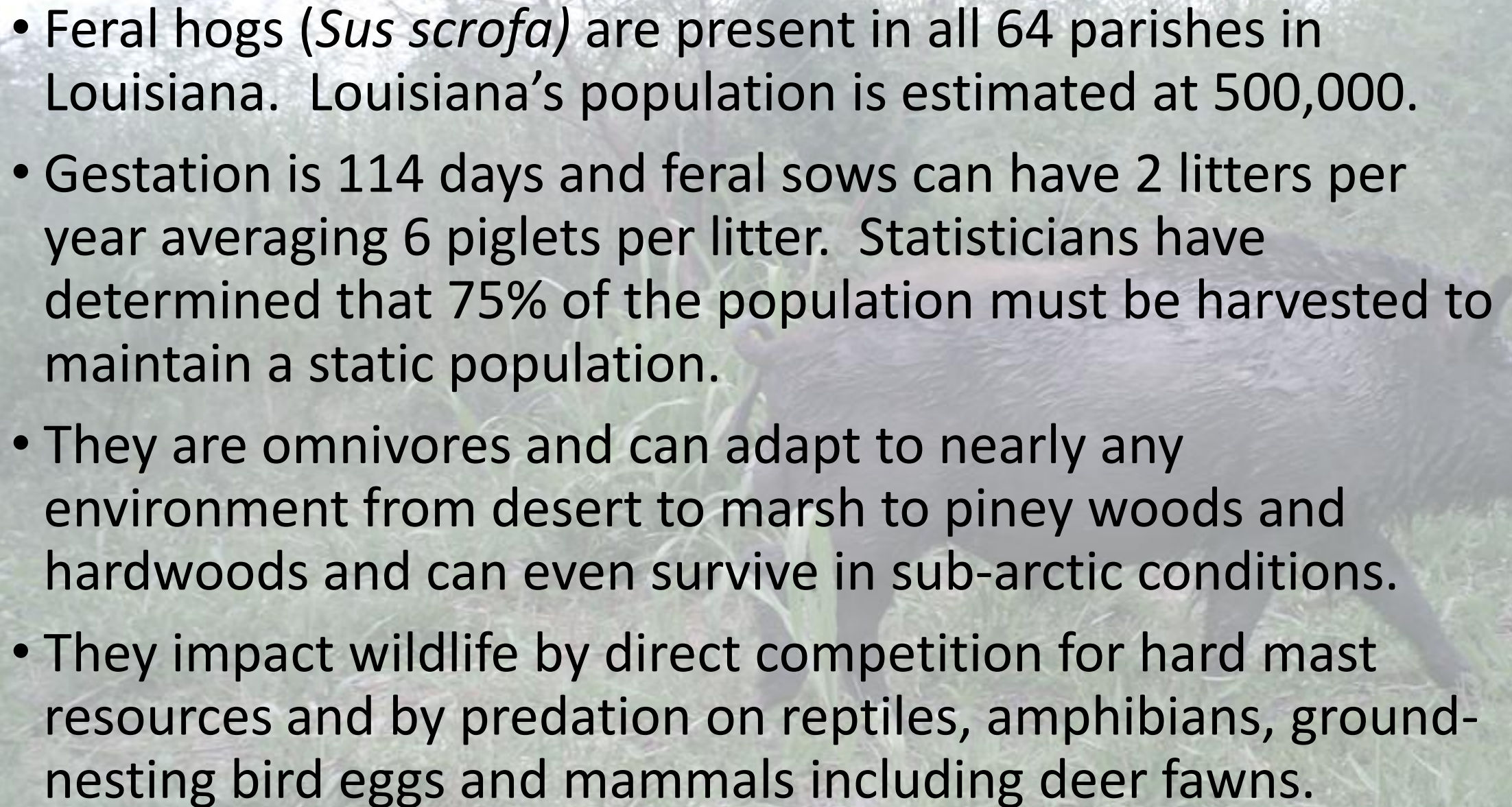


Feral Hogs in Louisiana: An Overview

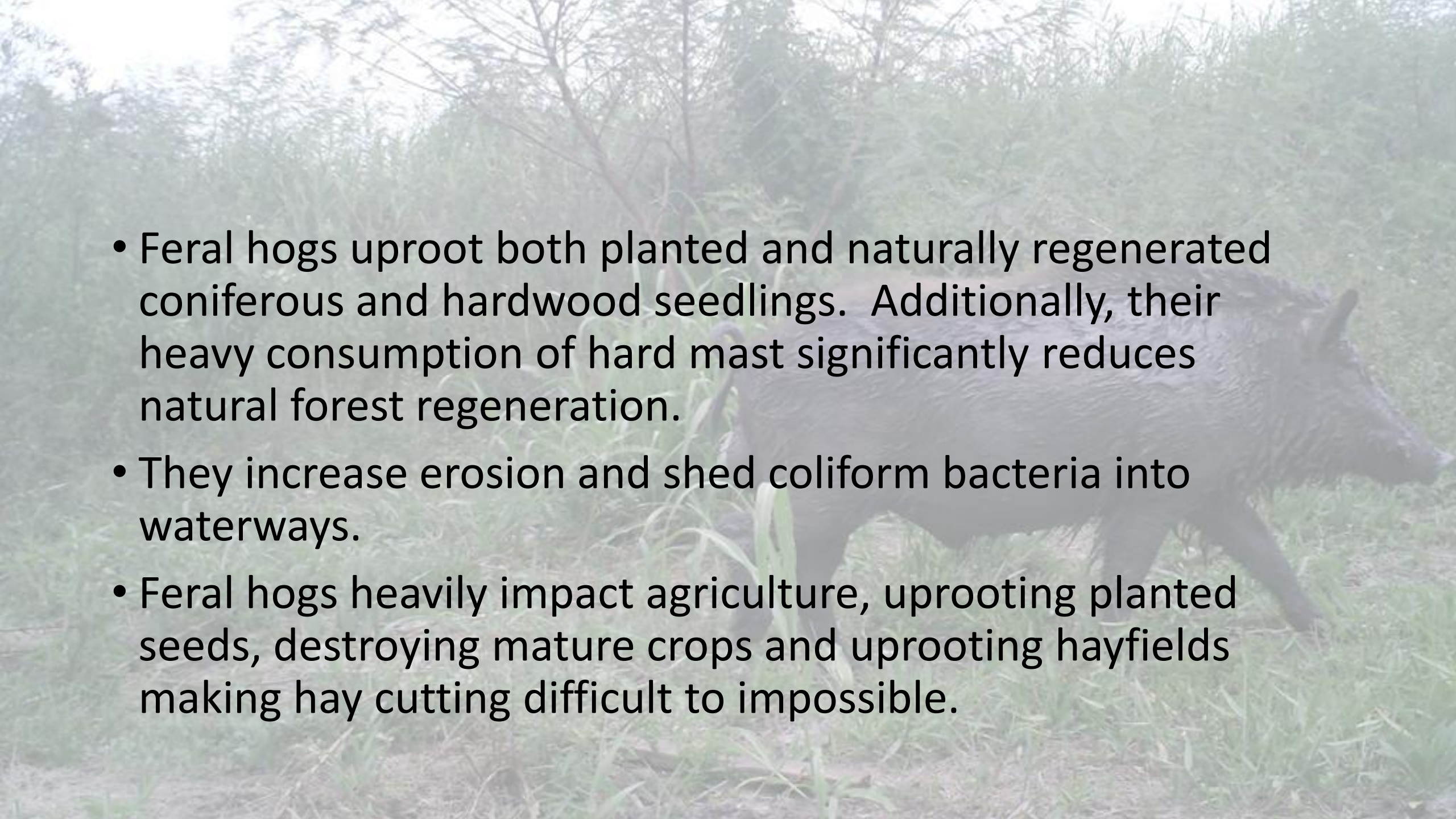
Presented to the Louisiana Wildlife and Fisheries Commission
April 3, 2014

James M. LaCour DVM
State Wildlife Veterinarian
Louisiana Department of Wildlife and Fisheries



- 
- A photograph of a feral hog in a field, serving as the background for the text. The hog is dark-colored and is standing in a grassy area with trees in the background.
- Feral hogs (*Sus scrofa*) are present in all 64 parishes in Louisiana. Louisiana's population is estimated at 500,000.
 - Gestation is 114 days and feral sows can have 2 litters per year averaging 6 piglets per litter. Statisticians have determined that 75% of the population must be harvested to maintain a static population.
 - They are omnivores and can adapt to nearly any environment from desert to marsh to piney woods and hardwoods and can even survive in sub-arctic conditions.
 - They impact wildlife by direct competition for hard mast resources and by predation on reptiles, amphibians, ground-nesting bird eggs and mammals including deer fawns.



- 
- A feral hog is shown in a natural setting, standing in a field of tall grass and young trees. The hog is dark-colored and has a prominent snout. The background is slightly blurred, showing more trees and foliage.
- Feral hogs uproot both planted and naturally regenerated coniferous and hardwood seedlings. Additionally, their heavy consumption of hard mast significantly reduces natural forest regeneration.
 - They increase erosion and shed coliform bacteria into waterways.
 - Feral hogs heavily impact agriculture, uprooting planted seeds, destroying mature crops and uprooting hayfields making hay cutting difficult to impossible.









DAMAGE CLOSE UP





HOG ROOTED MUSKRAT MOUND



Diseases of Feral Hogs



Swine Brucellosis



- The causative agent of Swine Brucellosis is *Brucella suis*.
- *Brucella suis* is a facultative anaerobic bacteria.
- *Brucella suis* transmitted venereally or through contact with or ingestion of infected fluids or tissues.
 - Infected feral swine may be bacteremic for 60 days after infection. Reproductive fluids may stay infective for the life of the animal.



- *Brucella suis* is zoonotic disease with human cases reported each year in Louisiana.
- *Brucella suis* cross reacts with the *Brucella abortis* card test and milk-ring test.
 - Two dairies in Florida positive for *Brucella* on milk test—turned out to be *B. suis*.
 - Farmers observed feral hog boars breeding bedded cows. Boars were harvested and tested positive for *B. suis*.



- *Brucella suis* causes infertility, abortions, orchitis, oophoritis, lameness, joint abscessation and discospondylitis in animals
- *B. suis* may cause undulant fever, malaise, joint pain and even death in people.
 - Humans may contract this disease by the introduction of bacteremic blood and bodily fluids into open wounds or onto mucous membranes.
 - Personal protective equipment is paramount when dealing with feral swine!



Currently, Louisiana cattle and domestic swine are classified as Brucellosis free, thus aiding interstate movement of animals.





LDWF surveillance testing of over 1000 feral swine statewide revealed that 3.5% were serologically positive to *Brucella* antigen.

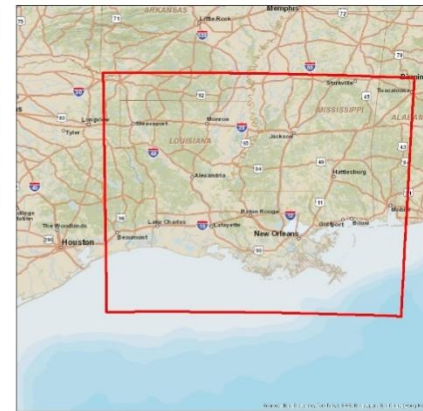
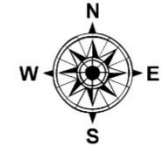




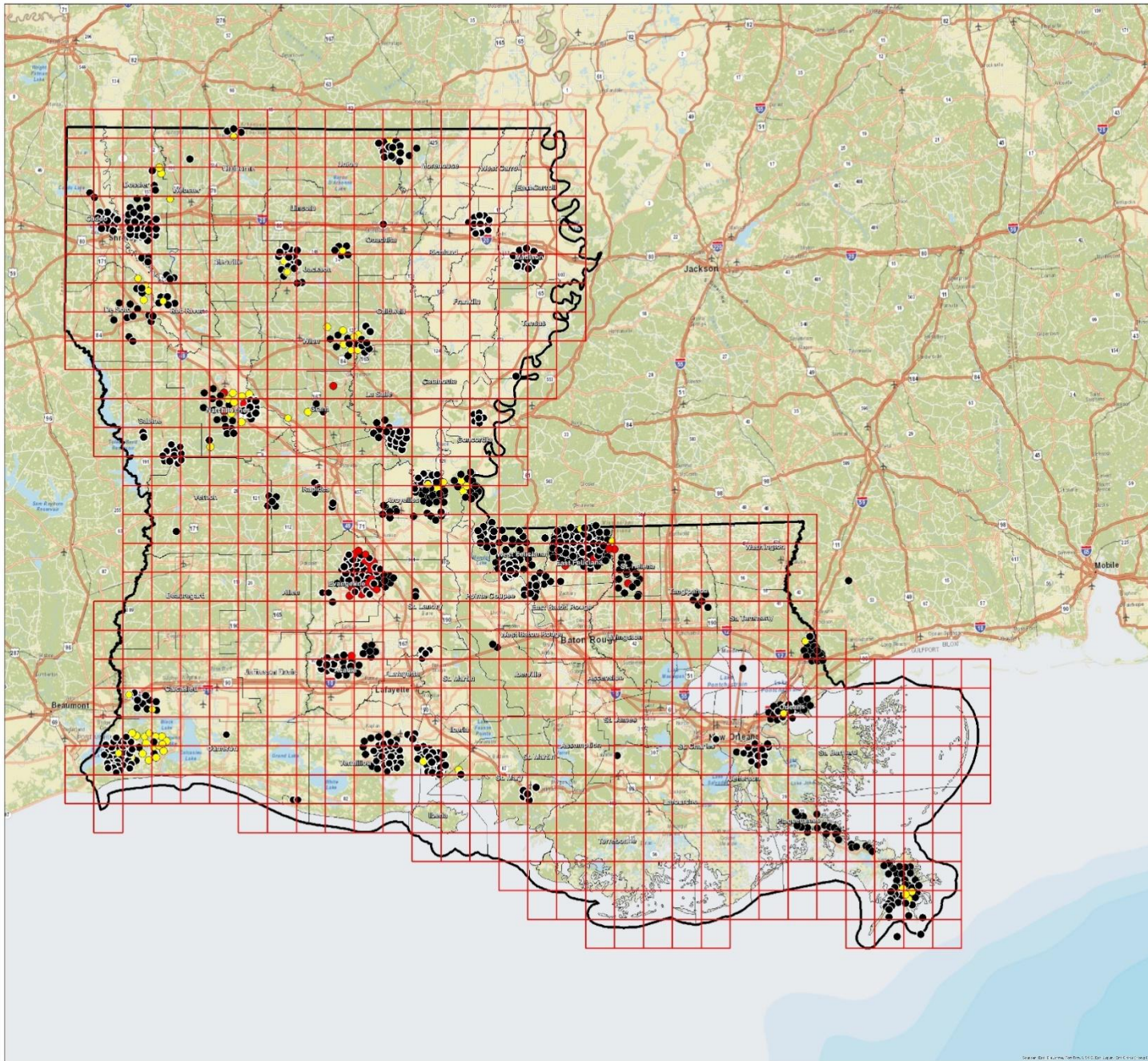
Louisiana Feral Swine

Legend

-  100 Sq Mile Grid
-  Negative
-  Pseudorabies Positive
-  Brucellosis Positive



Date December 12, 2013
 Author: S. Armand
 File Location: M:\WMA\LDWF_feralSwine_spa_Combined_121213.mxd
 Sources: WLF, ESRI



Pseudorabies



- Contagious to most mammals, excluding humans.
- Pseudorabies causes infertility and abortion in swine.
- Causes Aujeszky's Disease or "mad itch" in other species.
- Pseudorabies is caused by a herpesvirus.
- Transmitted via respiratory secretions and reproductive fluids.

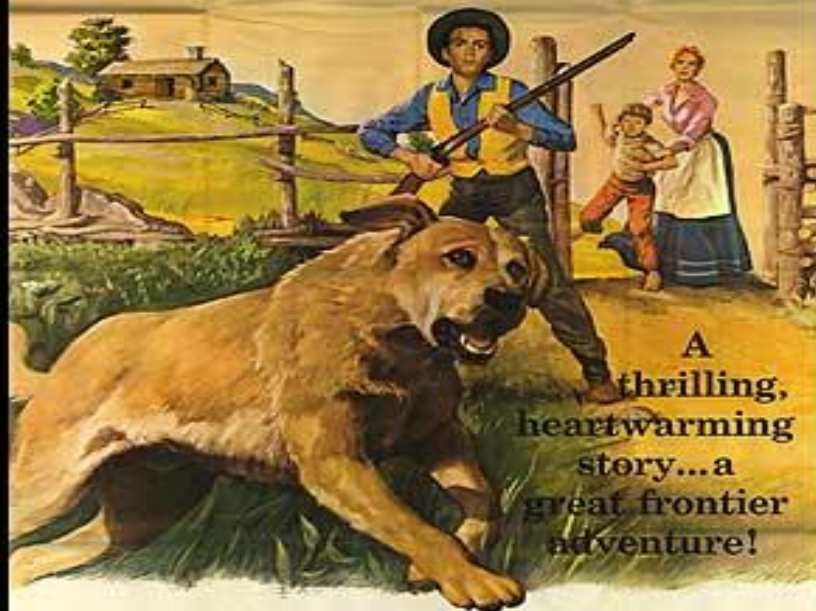


- Pseudorabies may be carried by feral swine.
 - LDWF surveillance testing of over 1000 feral swine statewide revealed that 8.4% were serologically positive for pseudorabies.
 - Anecdotal reports from veterinarians and “hog doggers” indicate that this disease is being seen more in dogs.





WALT DISNEY'S
MOST DRAMATIC MOTION PICTURE!



A
thrilling,
heartwarming
story...a
great frontier
adventure!

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co-starring in

OLD YELLER

TECHNICOLOR®

with CHUCK CONNORS • JEFF YORG • TOMMY KIRK • KEVIN CORCORAN • BEVERLY WASHBURN

Screenplay by FRED GIPSON and WILLIAM TOMBERG • Based on the book by FRED GIPSON • Associate Producer BILL ANDERSON • Directed by ROBERT STEVENSON





Released by BUNA VISTA Distribution Co., Inc. • © 1951 Walt Disney Productions

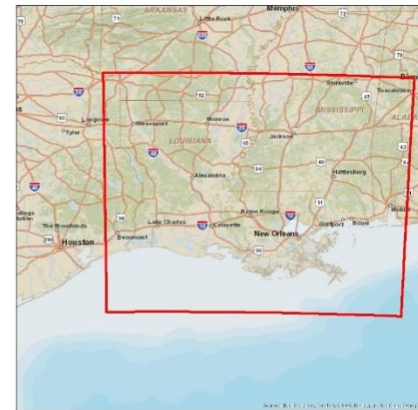
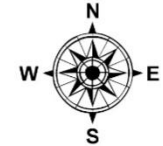


LOOK FOR THE NAME WALT DISNEY FOR THE FINEST IN FAMILY ENTERTAINMENT

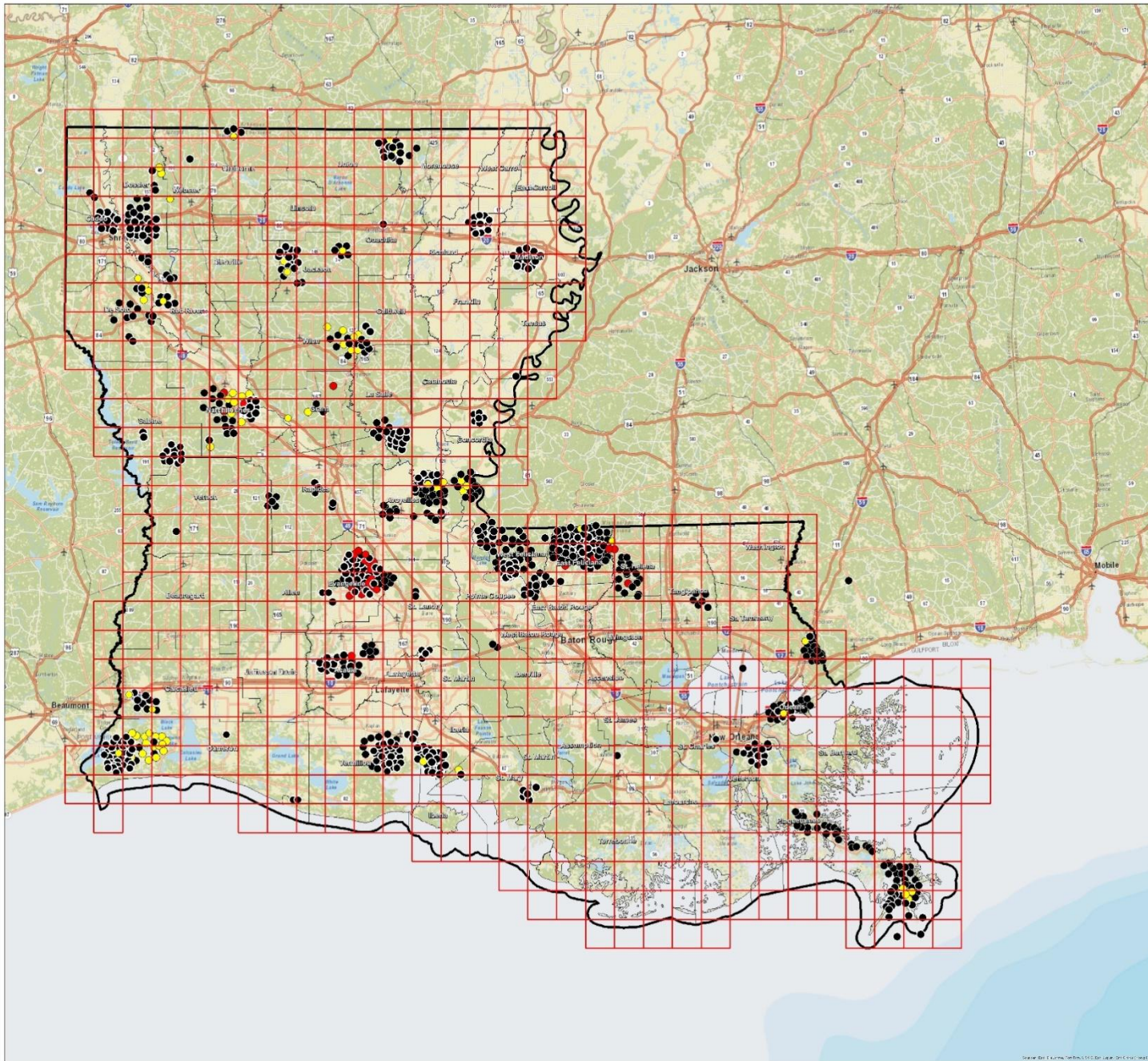
Louisiana Feral Swine

Legend

-  100 Sq Mile Grid
-  Negative
-  Pseudorabies Positive
-  Brucellosis Positive



Date December 12, 2013
 Author: S. Armand
 File Location: M:\WMA\LDWF_feralSwine_spa_Combined_121213.mxd
 Sources: WLF, ESRI



- Domestic swine in Louisiana which are testing positive for Pseudorabies after exposure to infected feral swine are being classified as “Transitional”.
- **Both Swine Brucellosis and Pseudorabies in feral swine may one day be a threat to our “Brucellosis- Free” status in domestic livestock!**



Leptospirosis



- Causative agent is *Leptospira*.
- Gram-negative flagellated spirochete bacteria.
- Many serovars based on antigenic relatedness.
 - *Leptospira interrogans*
 - Serovars : *bratislava, pomona, icterohemorrhagica, canicola*
 - *Leptospira borgpetersenii*
 - Serovars: *sejroe, tarassovi*
 - *Leptospira kirschneri* serovar *grippotyphosa*



- *Leptospira interrogans* serovars *bratislava* and *pomona* are uniquely adapted to swine. Infected animals may be persistent shedders of the bacteria.
- *Leptospira hardjo* is commonly found in cattle and in swine which live in close proximity to cattle.



- Animals affected by leptospirosis may exhibit signs of fever, lethargy, myalgia, petechial hemorrhage, jaundice, hematuria, abortion and death.
- Leptospirosis has long been considered the number-one cause of cattle abortions in Louisiana.
- White-tailed deer have also been shown to abort fawns due to leptospirosis.






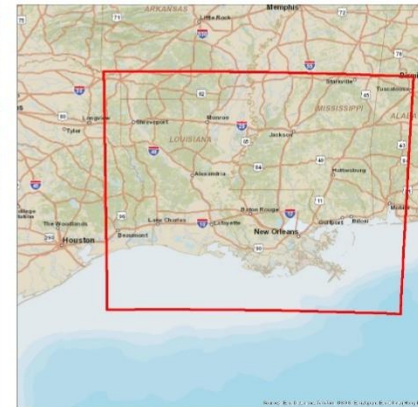
- Serological surveillance of feral hogs has shown an 80% exposure rate to leptospirosis and 12% of the titers were high enough to indicate active infection.
- The serovars represented in order of decreasing occurrence were:
 - *L. bratislava*
 - *L. pomona*
 - *L. icterohemorrhagica*
 - *L. hardjo*
 - *L. grippotyphosa*
 - *L. canicola*



Louisiana Feral Swine

Legend

-  100 Sq Mile Grid
-  Negative
-  Lepto Positive



Date December 12, 2013
 Author: S. Armand
 File Location: M:\WMA\LDWF_feralSwine_spa_Combined_121213.mxd
 Sources: WLF, ESRI



Trichinosis



- Causative agents are *Trichinella spiralis* and, rarely, *Trichinella pseudospiralis*
- Small (1.4-4mm) nematode which encyst in the sarcoplasm of muscle cells
- Killed by freezing (63 hr. in standard freezer) and cooking to 140° F. Variable susceptibility to drying and curing based on process.
- *Trichinella britovi* is found in wild boar in Europe and is very resistant to freezing.



- Feral hogs contract the parasite from eating infected meat in garbage, eating infected mice and rats, cannibalism, and eating feces from other pigs that have recently eaten infected meat.
- *T. spiralis* is present in both domestic and sylvatic life cycles.



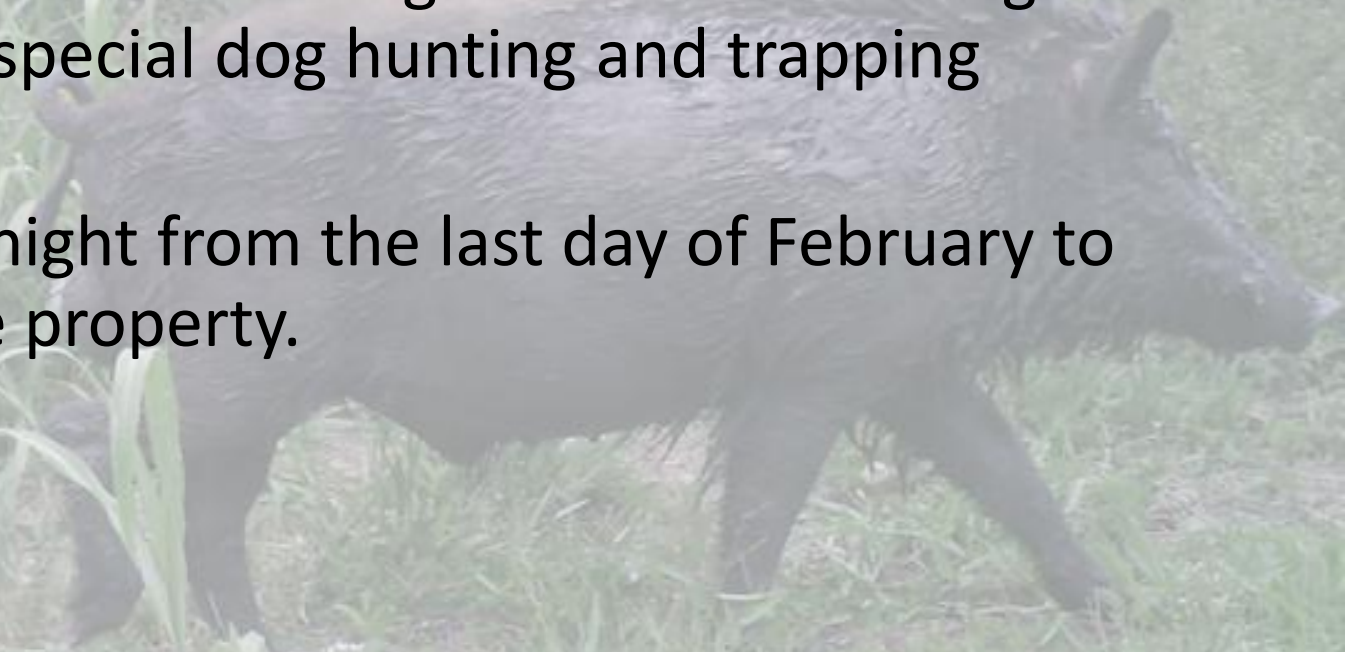
- Signs in humans include the following:
 - Enteral phase (12-48 hrs. post ingestion).
 - Diarrhea, nausea, vomiting and malaise
 - Migratory phase (2-6 weeks post ingestion).
 - Edema of hands and face, conjunctivitis, petechial hemorrhage of nailbeds, ataxia, dysphagia, fever, myalgia, myositis, arthritis, headache, vertigo, convulsions, and symptoms consistent with myocarditis and neuritis.
 - Parenteral phase (6 weeks-10 years)
 - Weight loss, depression, fatigue, psychological effects.



Control Methods



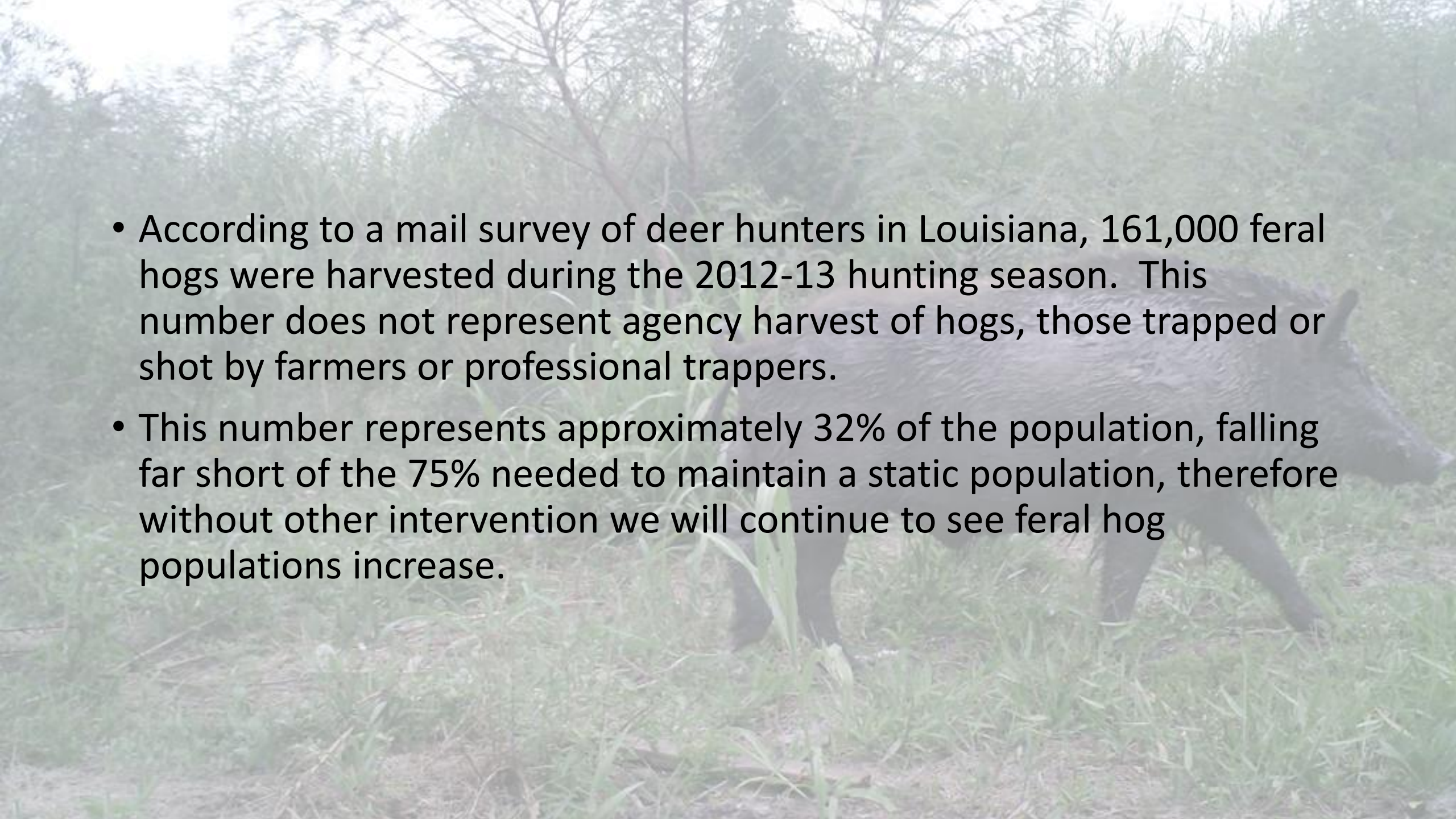
- Feral hogs are considered “Outlaw Quadrupeds” by the Louisiana Department of Wildlife and Fisheries and may be harvested year-round on private land by nearly any means including gunshot, trapping, snaring and with the aid of dogs.
- They may be harvested on most WMA’s during concurrent hunting seasons and some WMA’s have special dog hunting and trapping seasons.
- Feral hogs may be harvested at night from the last day of February to the last day of August on private property.





LA 9320F

THE EAST

- 
- A feral hog is visible in the background, standing in a field of tall grass and trees. The hog is dark-colored and appears to be looking towards the right. The background is slightly blurred, emphasizing the text in the foreground.
- According to a mail survey of deer hunters in Louisiana, 161,000 feral hogs were harvested during the 2012-13 hunting season. This number does not represent agency harvest of hogs, those trapped or shot by farmers or professional trappers.
 - This number represents approximately 32% of the population, falling far short of the 75% needed to maintain a static population, therefore without other intervention we will continue to see feral hog populations increase.

WMA Hog Dog Totals 2013 (43% of Hunters Reporting)

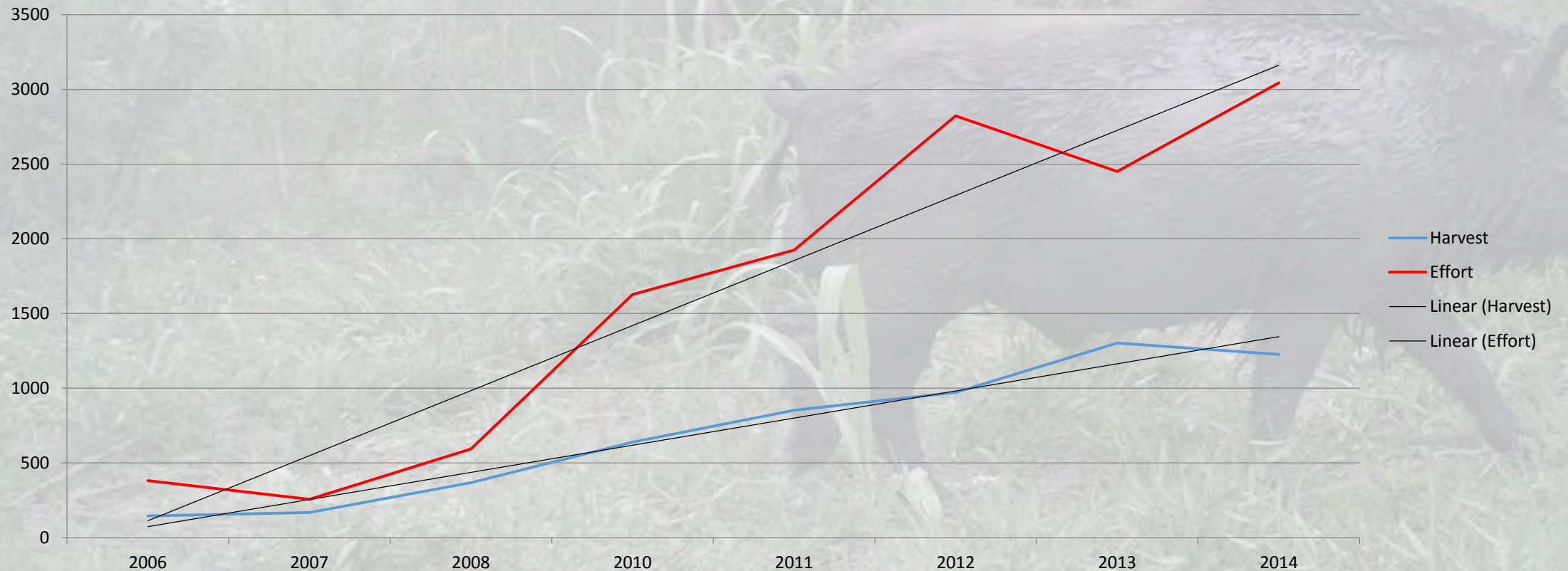
WMA	Permits Issued	*Number Reporting	Hogs Transported	Hogs Killed	Hogs Transported per permit	Hogs Killed per Permit
Attakapas	8	3	0	6	0.00	2.00
Bodcau	26	12	8	0	0.67	0.00
Beouf	35	21	0	0	0.00	0.00
Clear Creek	24	12	2	0	0.17	0.00
Dewey Wills	57	24	38	16	1.58	0.67
Jackson Bienville	32	16	11	13	0.69	0.81
Little River	7	1	0	0	0.00	0.00
Pearl River	70	17	10	0	0.59	0.00
Richard K. Yancey	107	46	12	10	0.26	0.22
Sabine	8	3	5	6	1.67	2.00
Sabine Island	9	3	0	0	0.00	0.00
Westbay	58	30	15	1	0.50	0.03
*Totals	441	188	101	52	**0.54	**0.28

WMA Hog Harvest by Incidental Hunting 2006-2014

WMA	Reported Harvest 2006-2014	Reported Hunter Effort 2006-2014	Harvest per Effort
Attakapas	206	823	0.25
Bodcau	217	621	0.35
Beouf	206	888	0.23
Clear Creek	18	205	0.09
Dewey Wills	426	1,010	0.42
Jackson Bienville	806	1,369	0.59
Little River	10	29	0.34
Pearl River	2,780	4,217	0.66
Richard K. Yancey	1,524	3,733	0.41
Sabine	76	185	0.41
Sabine Island	18	48	0.38
Westbay	156	834	0.19
*Totals	6,443	13,962	0.45

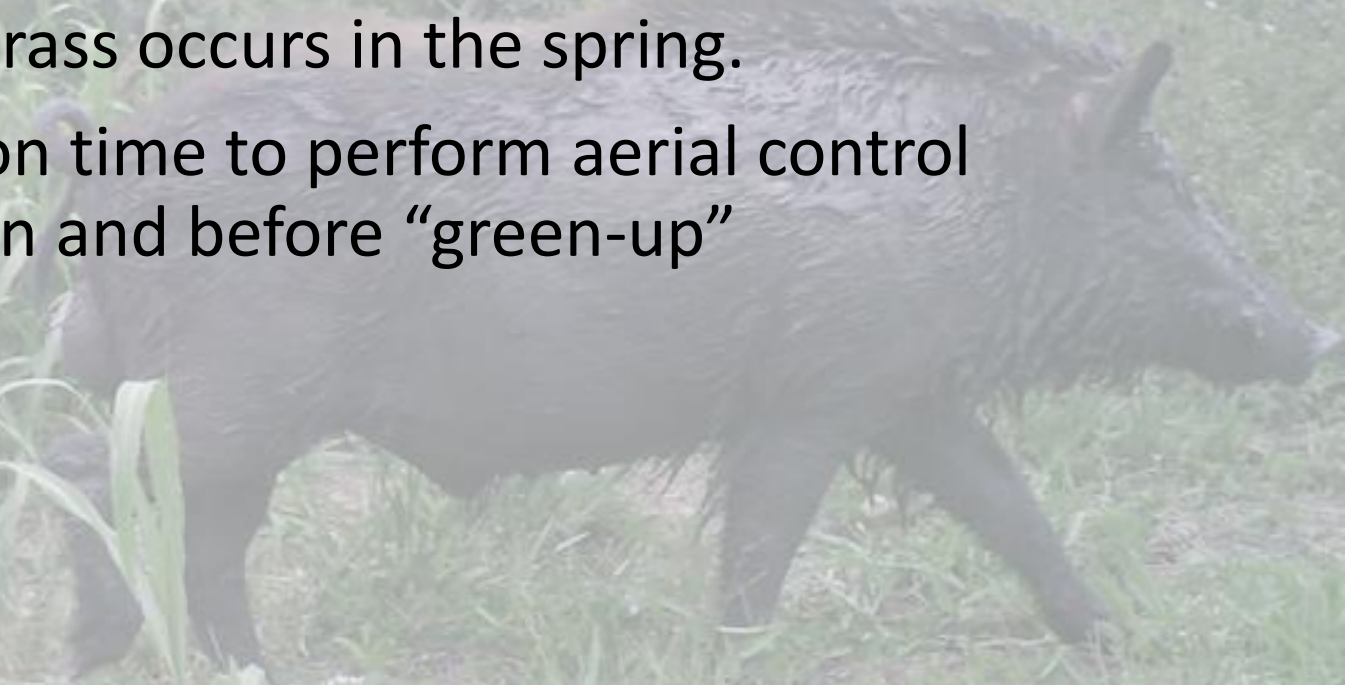
WMA Incidental Hog Harvest During Concurrent Seasons in February

Hog Harvest and Hunter Effort by Year for the Month of February





- Typically, for most habitats in LA, aerial control must be done before “green-up” of trees and marsh grass occurs in the spring.
- The month of March is a common time to perform aerial control because it is after hunting season and before “green-up”



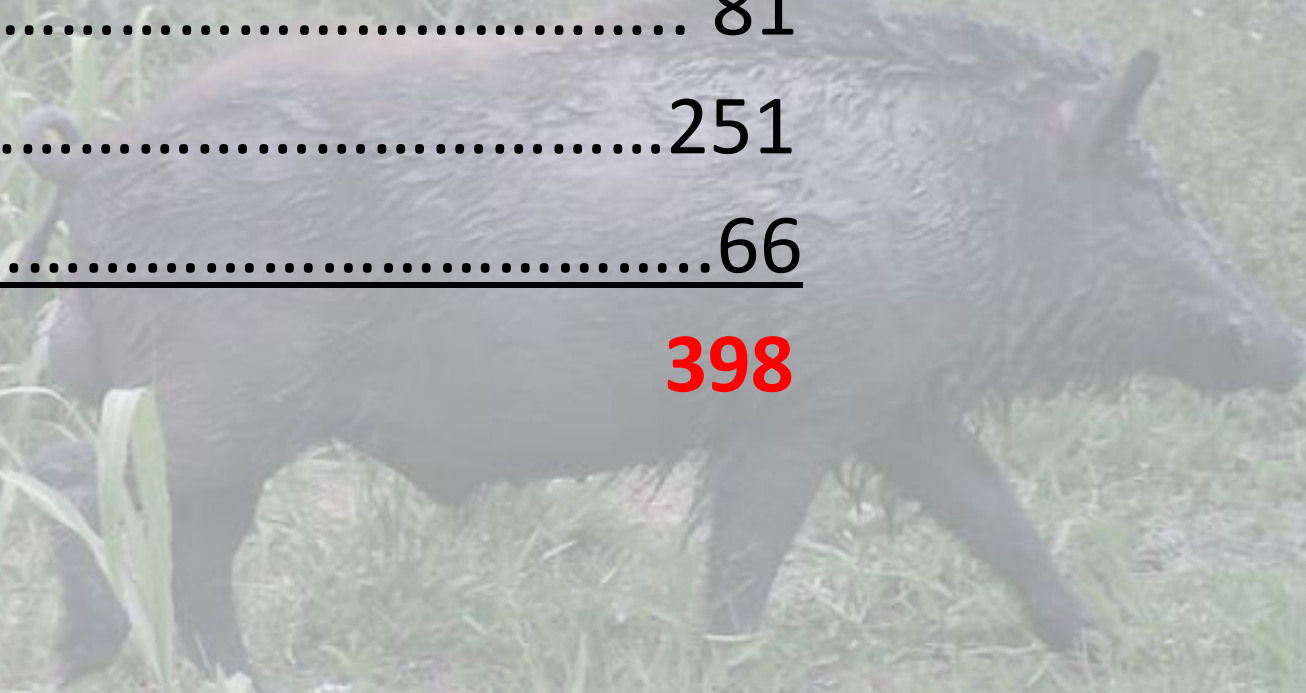
2014 LDWF Aerial Hog Control



<u>Location</u>	<u>No. Hogs Killed</u>
• Pearl River WMA.....	21
• Sherburne WMA.....	33
• <u>Pass a Loutre WMA (project continuation).....</u>	<u>65</u>
• Total	119

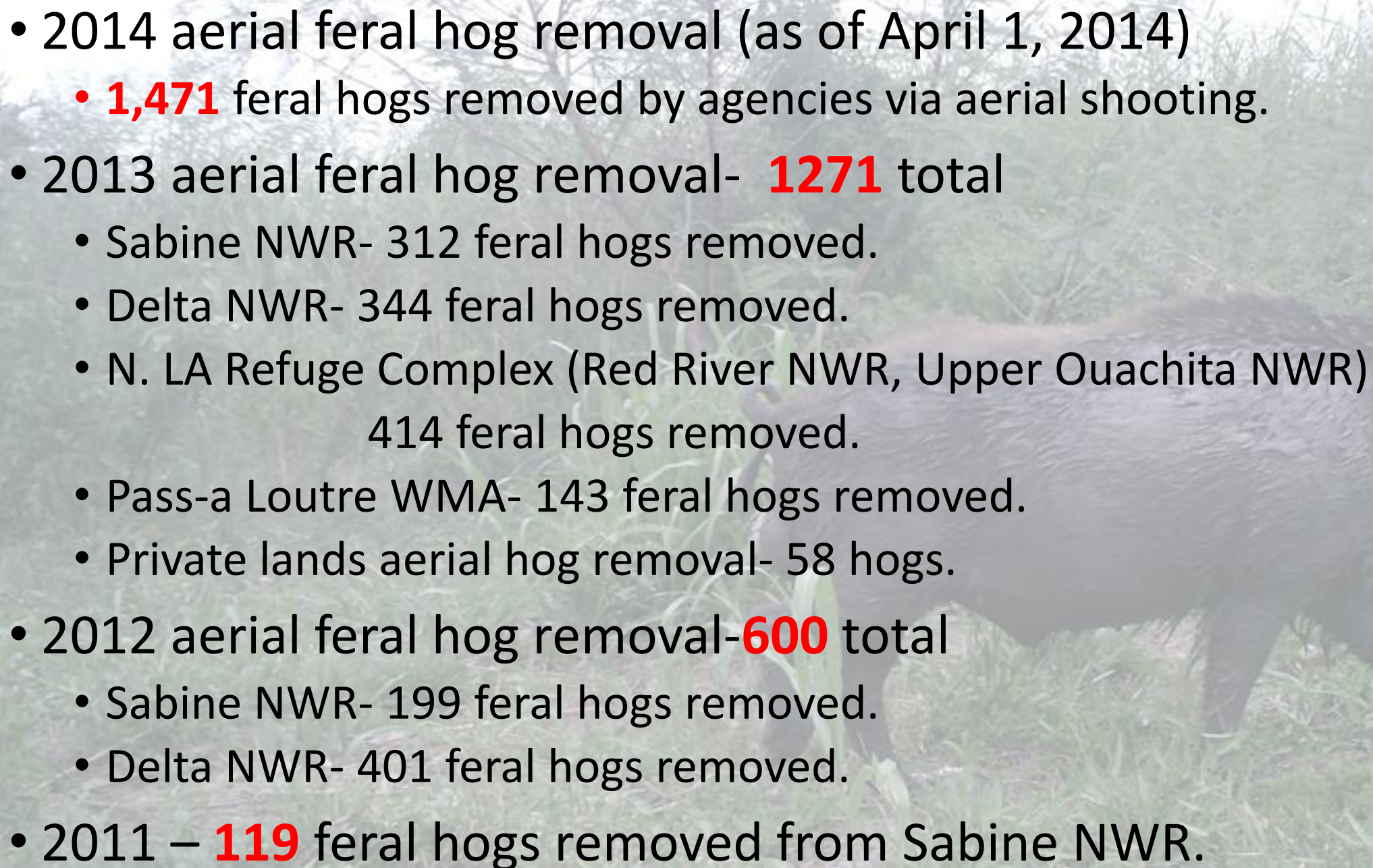
2014 NWR Aerial Hog Control USFWS

<u>Refuge</u>	<u>No. hogs Killed</u>
• Bayou Sauvage NWR.....	81
• Delta NWR.....	251
• <u>Big Branch NWR.....</u>	<u>66</u>
• Total	398



2014 Aerial Hog Control USDA WS

<u>Area</u>	<u>No. Hogs Killed</u>
• Upper Ouchita NWR Mollicy Unit.....	230
• Red River NWR (Red River Parish).....	82
• Red River NWR (Natchitoches Parish).....	117
• Natchitoches Soil and Water Conservation Cooperative....	274
• <u>Sabine NWR.....</u>	<u>251</u>
• Total	954

- 
- A feral hog is shown in profile, standing in a field of tall grass. The hog has dark, coarse fur and a long, pointed snout. The background is a soft-focus green field.
- 2014 aerial feral hog removal (as of April 1, 2014)
 - **1,471** feral hogs removed by agencies via aerial shooting.
 - 2013 aerial feral hog removal- **1271** total
 - Sabine NWR- 312 feral hogs removed.
 - Delta NWR- 344 feral hogs removed.
 - N. LA Refuge Complex (Red River NWR, Upper Ouachita NWR)
414 feral hogs removed.
 - Pass-a Loutre WMA- 143 feral hogs removed.
 - Private lands aerial hog removal- 58 hogs.
 - 2012 aerial feral hog removal-**600** total
 - Sabine NWR- 199 feral hogs removed.
 - Delta NWR- 401 feral hogs removed.
 - 2011 – **119** feral hogs removed from Sabine NWR.

Potentially Suitable Areas for Helicopter Use



Areas for Helicopter Use
0 10 20 30 40 50 Miles

National Geographic, Esri, DeLorme, NAVTEQ, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, IPC & LDWF



Other Research



Pass-a Loutre WMA Feral Hog Study



Pass-a-Loutre 2013

South Pass used to divide study site.

Areas to west= control areas

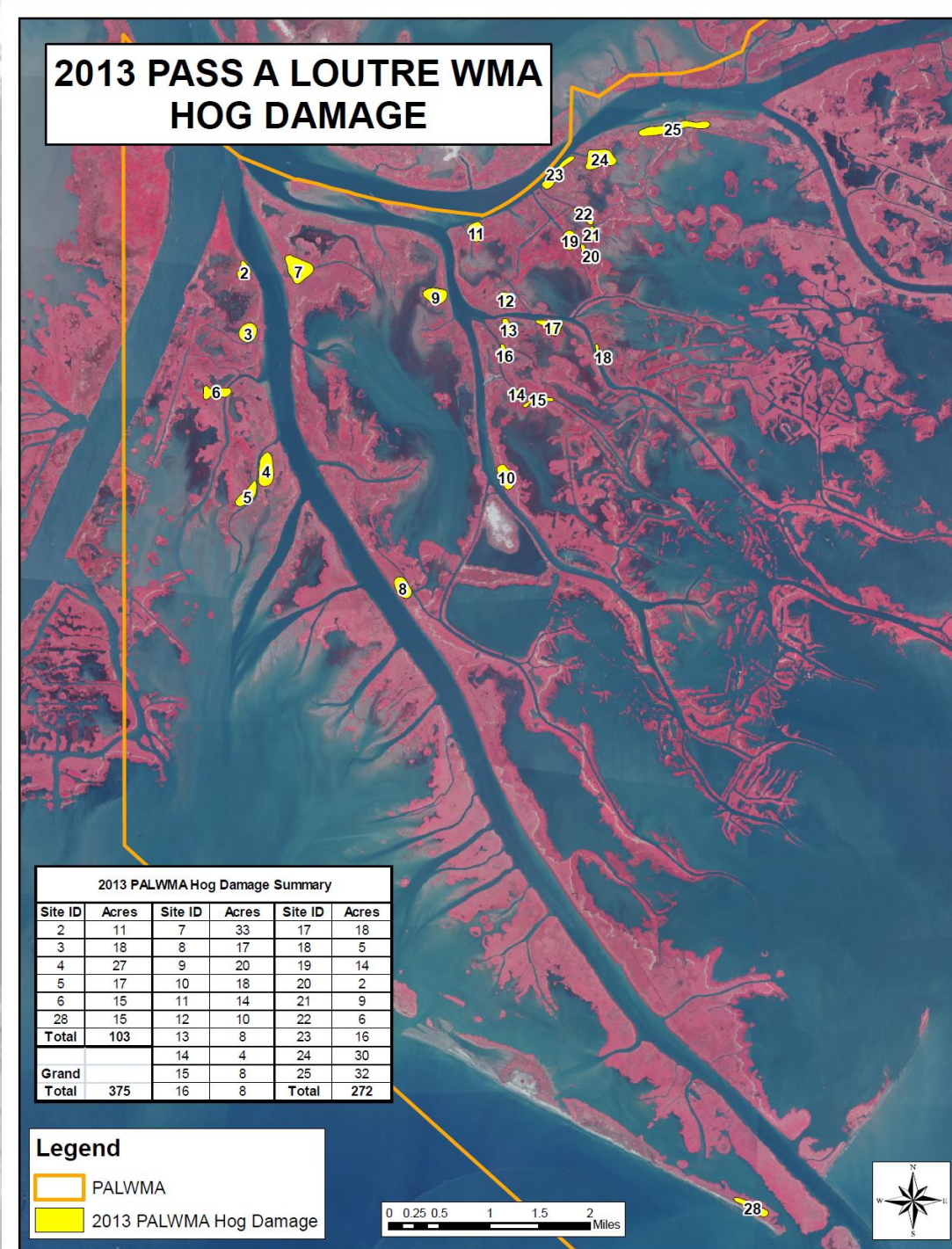
Areas to east= study areas

Initial damage:

West= 6 sites, 103 acres

East= 15 sites, 180 acres

143 feral hogs were removed by aerial shooting in March of 2013 after damages were quantitated.



Pass-a-Loutre 2014

March 2014

Damage Present:

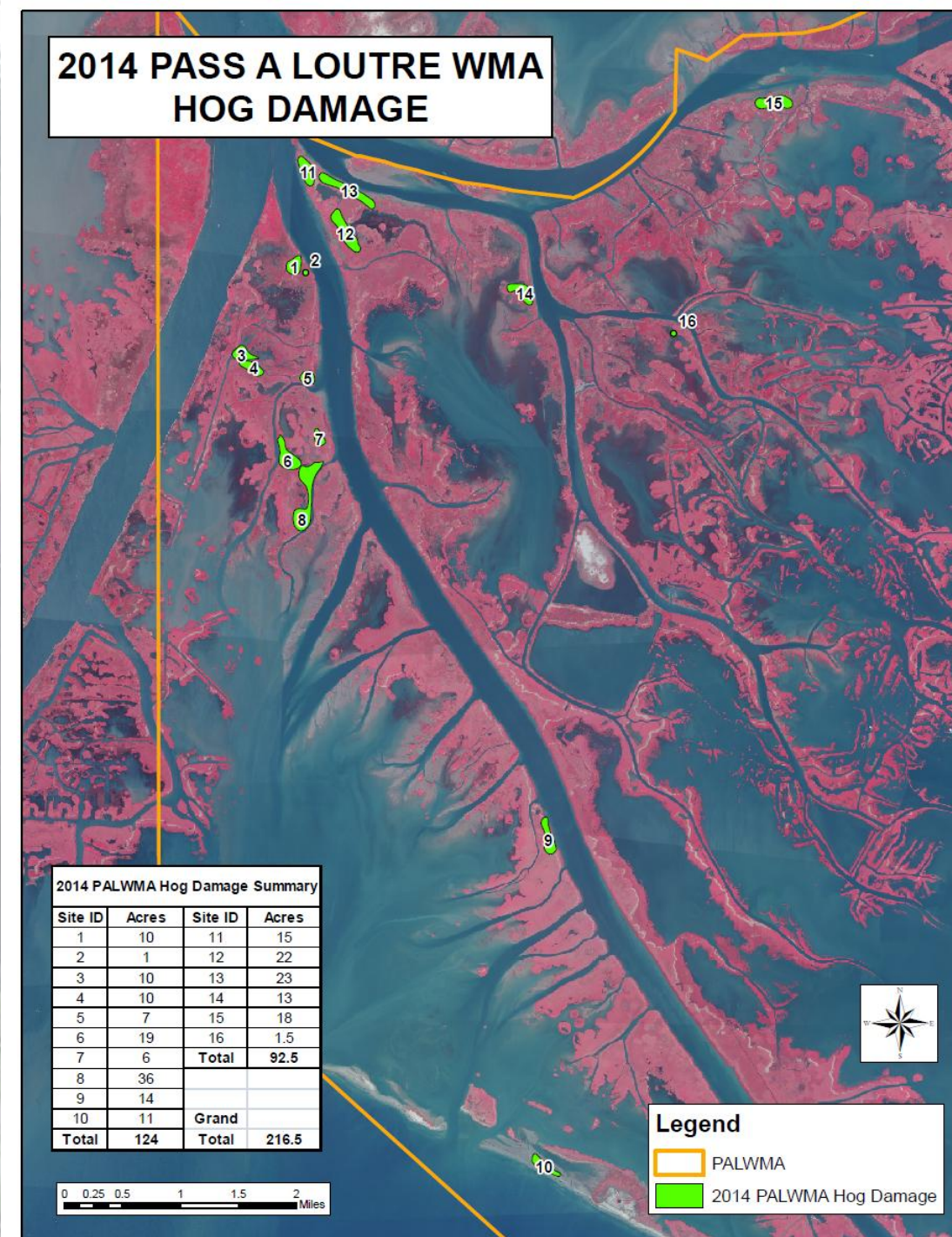
West (control) -10 sites

124 acres

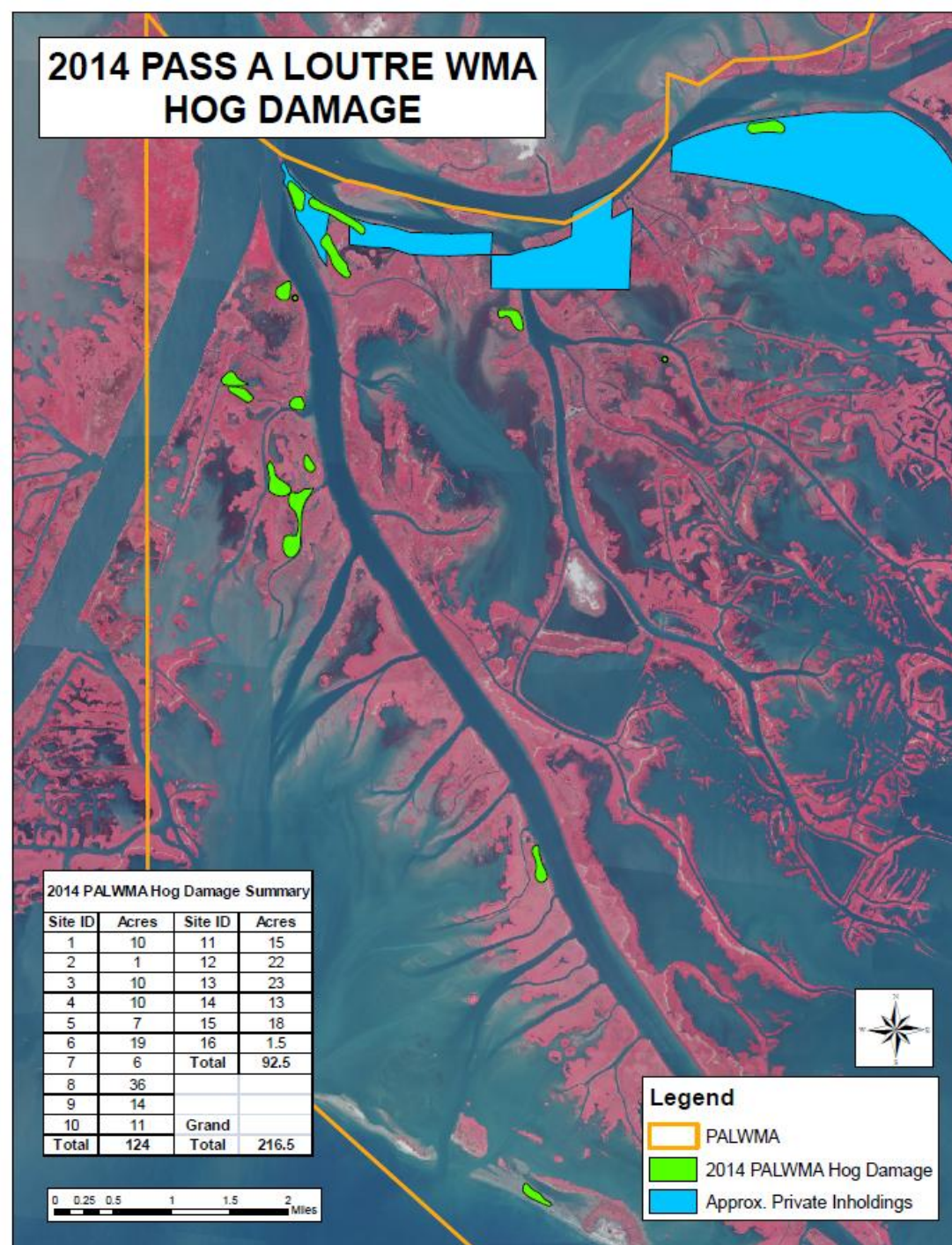
East (treatment)- 2.5 sites

25.5 acres

65 feral hogs were removed by aerial shooting after the damage was quantitated.



Areas in blue are private inholdings and were eliminated from data for the purpose of this presentation.



Pass-a-Loutre Comparison

2014 vs. 2013

West(control area):

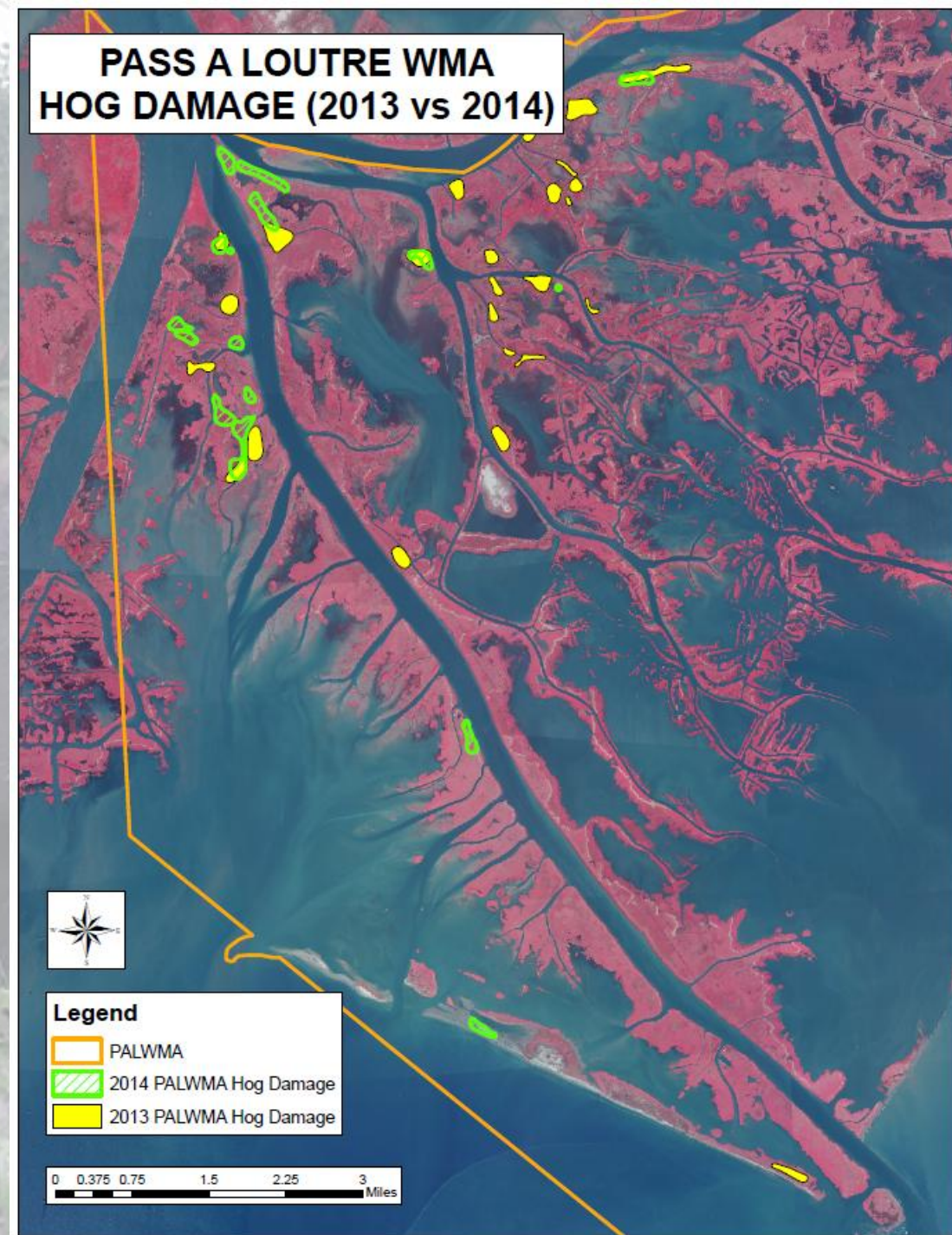
67% **increase** in damaged sites.

20% **increase** in damaged acres.

East (study area)

83% **reduction** in damaged sites.

86% **reduction** in damaged acres.



- Telemetric Study of Feral Hogs in Mixed Hardwood-Loblolly Pine Forests Located in East Feliciana Parish, LA.
 - Five immature sows were collared with GPS/ Argos/ VHF collars.
 - Three were harvested by hunters and two by LDWF biological staff.
 - The shortest duration of study was 4 months and the longest 17 months with an average of 12 months.
 - Avg. weight gain was 9 lbs./ month.
 - Avg. home range varied from 6 to 10 sq. mi.
 - Only 1 pig crossed a blacktop road (escaping a forest fire).











2012.02.28 04:01:29

2012.02.25 04:01:48

2012.02.26 06:01:35

6/20/2012 11 am

2012.02.20 02:00:36

2012.02.24 10:02:05

1:35

2012.02.23 08:01:29

2012.02.13 12:00:37

2012.02.24 06:01:05

2012.02.23 08:01:29

2012.02.28 10:01:30

2012.02.21 08:35:04

2012.02.21 08:35:04

3 10:01:24

2012.02.28 08:01:06

2012.02.28 06:01:35

2012.02.21 08:35:04

2012.02.13 10:01:24

2012.02.24 12:02:08

2012.02.13 10:01:24

2012.02.18 02:02:05

2012.02.18 02:02:05

2012.02.18 02:02:05

2012.02.23 10:02:13

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2012.02.21 10:02:24

2012.02.24 18:00:35

2012.02.25 00:01:59

2012.02.12 14:02:35

2012.02.21 12:00:35

2012.02.21 22:00:46

2012.02.21 22:00:46

2012.02.28 18:00:35

2012.02.26 16:03:00

2012.02.20 18:02:29

2012.02.11 14:01:23

2012.02.28 02:01:29

2012.02.20 18:02:29

2012.02.19 22:02:30

2012.02.15 14:01:35

2012.02.15 14:01:35

2012.02.28 02:01:29

2012.02.29 00:02:24

2012.02.28 02:01:29

2012.02.18 12:00:54

2012.02.11 02:00:36

2012.02.12 04:00:36

2012.02.26 18:00:35

2012.02.10 22:00:53

2012.02.27 18:00:35

2012.02.27 18:00:35



- Toxicant research:
 - Sodium nitrite
 - Reasonably safe for humans.
 - Highly toxic to pigs.
 - Bait Deliverable.
 - Food product.
 - Low/ no residues
 - Humane.
 - Cheap.



- Sodium nitrite oxidizes the iron molecule in hemoglobin to form methemoglobin.
 - Oxidized form the ferrous (Fe^{2+}) to the ferric (Fe^{3+}) state.
 - Ferric state is bound and cannot carry oxygen.
 - Sodium nitrite also causes relaxation of smooth muscles in blood vessels thus lowering blood pressure
 - Animals become recumbent within 1 hour after ingestion with no signs of struggle.
 - Non-lethal doses are metabolized by methemoglobin reductase enzyme.
 - Plasma half-life 29-62 minutes.





Bushnell

080 F ● 2013/06/28 20:05:33



Bushnell

073 F ● 2013/08/04 17:56:22



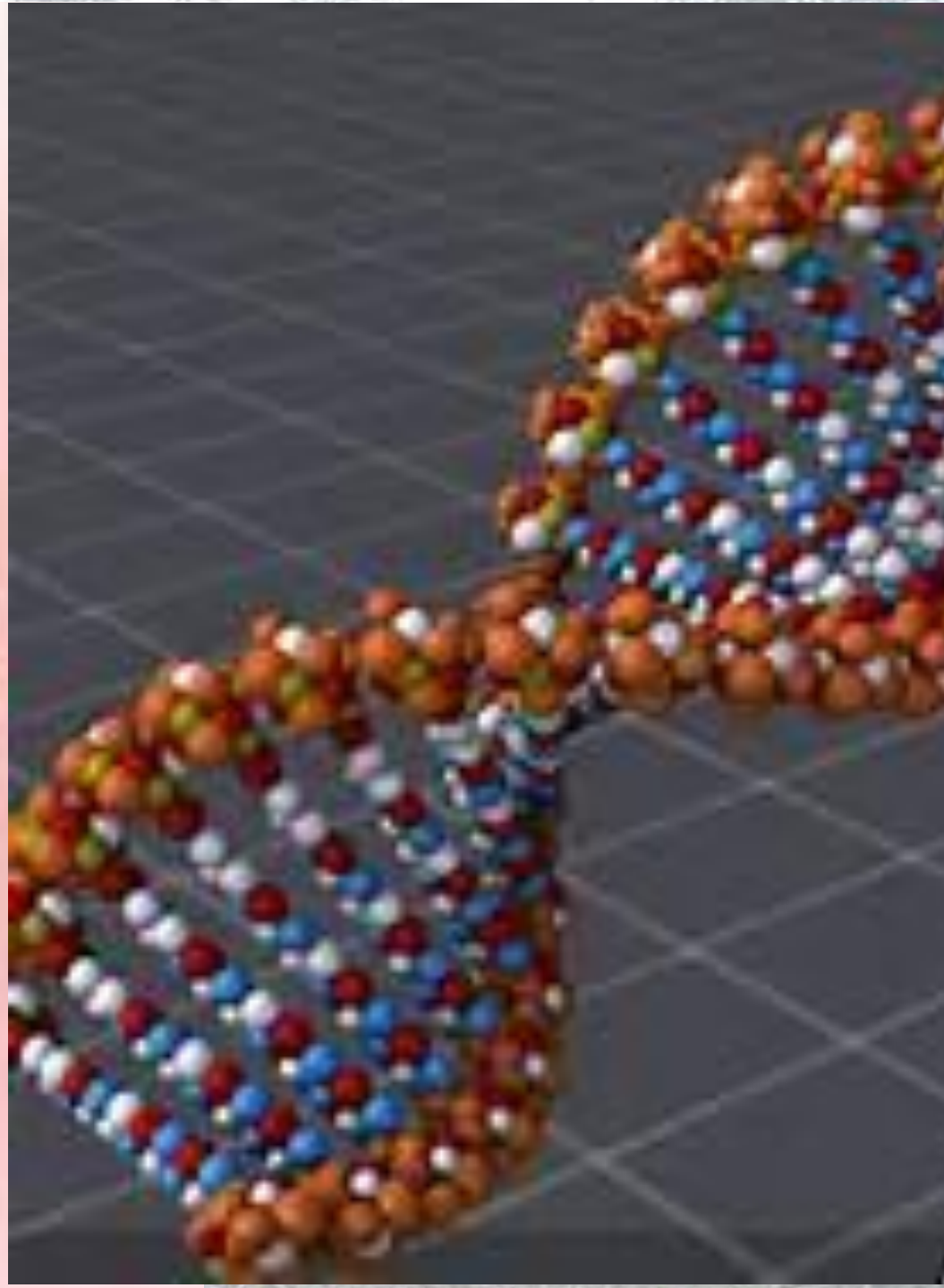
Bushnell

064°F ● 2011/01/02 08:09:42



Bushnell

064°F ● 2011/01/02 08:13:22



Future Research



USDA Funding to be targeted toward feral swine control in U.S.

\$20,000,000

A photograph of a feral pig standing in a field of tall grass. The pig is dark-colored and has a wild, unkempt appearance. The background is a dense thicket of green grass and some trees, slightly out of focus. The overall scene is natural and somewhat overgrown.

