South Florida Deer Research Project

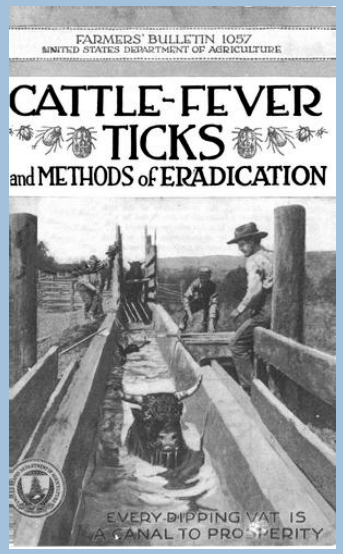
ORV Advisory Committee Meeting

April 22, 2014

Elina Garrison
Florida Fish and Wildlife Conservation Commission

Historical Background - Deer

- Based on early accounts: deer not particularly abundant
- “Drainage fever” of 1882-1928; extensive construction of canals
- Major human development into the area, e.g. Tamiami Trail 1928 and initiation for commercial logging, ranching, and agriculture
- Cattle fever tick eradication attempts in the 1940s: 4000 deer killed in the Big Cypress Region
- Eradication of screw-worm in 1958



“Deer populations have undoubtedly **fluctuated in response to climatic cycles** from the earliest times, gradually increasing during drought years and sustaining decreases in the wet years. The drainage program has benefitted deer and populations have, **in general, progressively increased** over the past 25 years.”

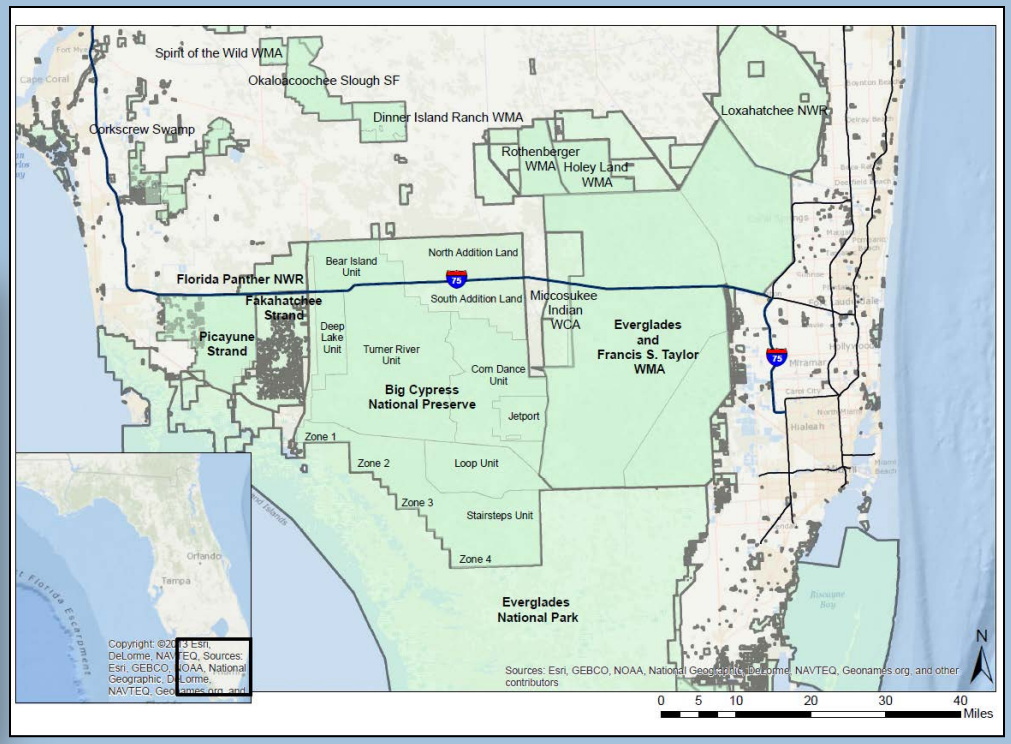
~ Loveless 1959

Historical Background - Panthers

Florida panther: from “nuisance” to Endangered Species

- Bounty in 1832
- Attempt to eradicate

- Legal protection in 1958, endangered species in 1967
- Genetic restoration 1995
- Importance of public lands



Past Research

Bear Island Deer/Panther Relationship (1986 -1991)

Conclusions:

- Stable deer herd
- Not negatively impacted by hunting
- Predation most important cause of mortality
- Provided stable prey base for panthers

Stairsteps Zone 4 and Everglades NP Deer Population Study (1989-1991)

Conclusions:

- Survival rates and productivity approached levels of maintaining stable population in Stairsteps
- Based on fawn survival, ENP population was in demographic collapse
- Bobcat predation believed to be the principal factor in regulating the growth and abundance of deer population in the wet prairie system

Recent Trends

Stairsteps – Zone 4

- Impacted by severe high water event 1995
- Deer population appeared to recover, but began declining in 2000
- 2013 aerial survey – no deer were counted

Other Units

- Harvest and aerial survey indices: fluctuate, but no significant declines
- Decline in harvest in Loop and Stairsteps
- Aerial surveys – difficult to obtain accurate density estimates



Summary of the Background

- The area has gone through changes and unclear how these changes have influenced/will continue to impact deer population characteristics
    - Survival and causes of mortality
    - Recruitment
    - Population growth
- Some areas have experienced deer population declines, sustainable harvest in others
- Speculations for the causes: changes in hydrology and increased predation pressure by panthers and other (new) predators
- Current aerial surveys and harvest data provide an index of population abundance, but no reliable population estimates or recruitment data

Players: some old, some new

- Hydrology - natural fluctuations and severe weather events, Everglades restoration efforts, climate change
- Habitat - poor quality, changes in hydrology, prescribed fire
- Hunters – changes in regulations
- Predators - Panthers (increasing) and other predators (bobcats, coyotes, pythons)
- Alternative prey - decline in hogs, decline in other wildlife

> Current Issue > vol. 109 no. 7 > Michael E. Dorcas, 2418–2422

Severe mammal declines coincide with proliferation of invasive Burmese pythons in Everglades National Park

Michael E. Dorcas[a,1], John D. Willson[b], Robert N. Reed[c], Ray W. Snow[d], Michael R. [illegible][e], Melissa A. Miller[f], Walter E. Meshaka, Jr.[g], Paul T. Andreadis[h], Frank J. Mazzotti[e], C[illegible], and Kristen M. Hart[j]

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New hunting regulations approved as deer populations decline

By ERIC STAATS

Deer hunters will have new rules to follow in part of the Big Cypress National Preserve this fall as scientists puzzle over a dramatic decline in the deer population.

The Florida Fish and Wildlife Conservation Commission, meeting in St. Augustine, approved the new rules Wednesday.

Deer decline in South Florida

Everglades restoration will reduce their habitat

September 8, 2013 | By David Fleshler, Sun Sentinel

The white-tailed deer, an all-too-abundant consumer of gardens and hazard to drivers in much of the United States, faces an uncertain future in South Florida.

Deer numbers have dropped in some areas, dismaying hunters and forcing panthers, bobcats and other predators to range farther for their dinners. The restoration of the Everglades, expected to help alligators, wading birds and many other creatures, is likely to reduce deer numbers further, as habitat artificially dried out by canals and levees reverts to its historic, watery condition.

A white-tailed deer buck runs through the marsh at Loxahatchee National... (Joe Cavaretta / Sun Sentinel...)

Research Need: Comprehensive white-tailed deer study that provides the population information and monitoring methods necessary for science-based management.

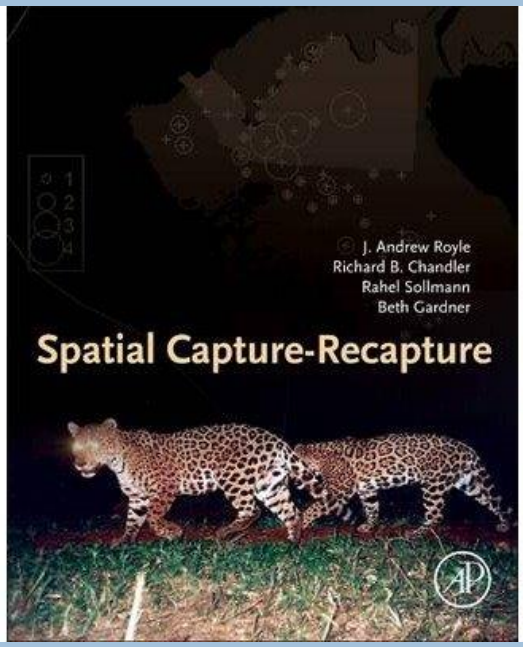
- Updated information on survival, causes of mortality and other demographics
- Understanding what factors impact deer populations
- Cost-effective, feasible monitoring method that allows us to obtain deer density and abundance estimates now and in the future

Team Effort – Partnering with University of Georgia (UGA), Joseph W. Jones Ecological Research Center (JC), FWC panther research and management, Fish and Wildlife Service, Conservancy of Southwest Florida, Big Cypress National Preserve and others.

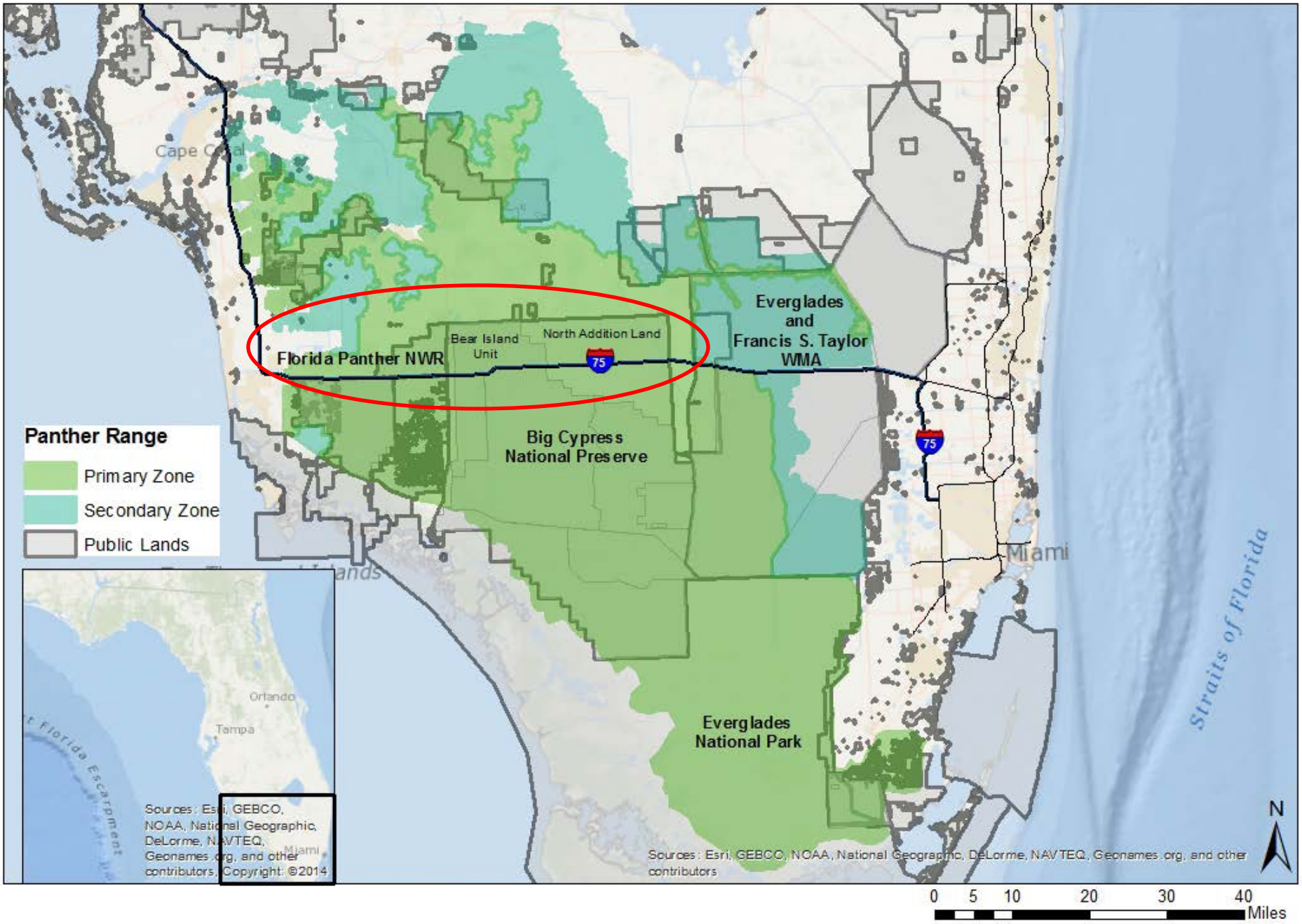
UGA and JC: Leading experts on white-tailed deer ecology, population modeling and predator ecologist - key components of this very complex system

Collaborating with FWS and FWC panther research team on existing and future camera grids, panther movement data – efficient use of agency resources and further understanding of deer/panther interactions.

Sportsmen groups and other user-groups: Key to the success of the project.



Study Areas


Florida Panther NWR
Bear Island Unit
North Addition Land
Everglades and Francis S. Taylor WMA
Big Cypress National Preserve
Everglades National Park
Panther Range
Primary Zone
Secondary Zone
Public Lands
Miami
Straits of Florida
Orlando
Tampa
Florida Escarpment
Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, NAVTEQ, Geonames.org, and other contributors
Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, NAVTEQ, Geonames.org, and other contributors | Copyright: ©2014
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Main Objectives

1. Understand **what factors** influence deer population dynamics in South Florida.

    - Hydrology, hunting, predators, climatic conditions, habitat characteristics, and landscape attributes

    How each of those impact:

    - Resource selection, home-range size and selection, parturition and fawn-rearing areas, movement, survival and population growth of deer

2. Develop a **survey method** using remote-sensing cameras that will allow us to obtain dependable **deer density and abundance** estimates at a large-scale.

Methods: Radio-telemetry

- Capture deer (adult bucks and does) using helicopters and other methods

- Fit with GPS-collars, remote monitoring

    - 12 locations/day for 2 years (4-5 years total)
    - Movement, habitat use, home-range etc.
    - Survival rate – what percentage of marked deer survive
    - Mortality event – determining causes

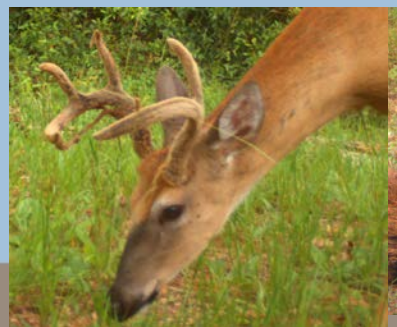
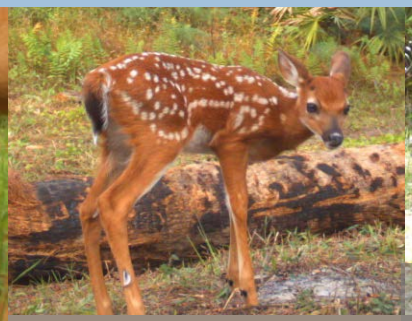
- First capture season: Dec 2014 – Jan 2015

Methods: Remote-cameras

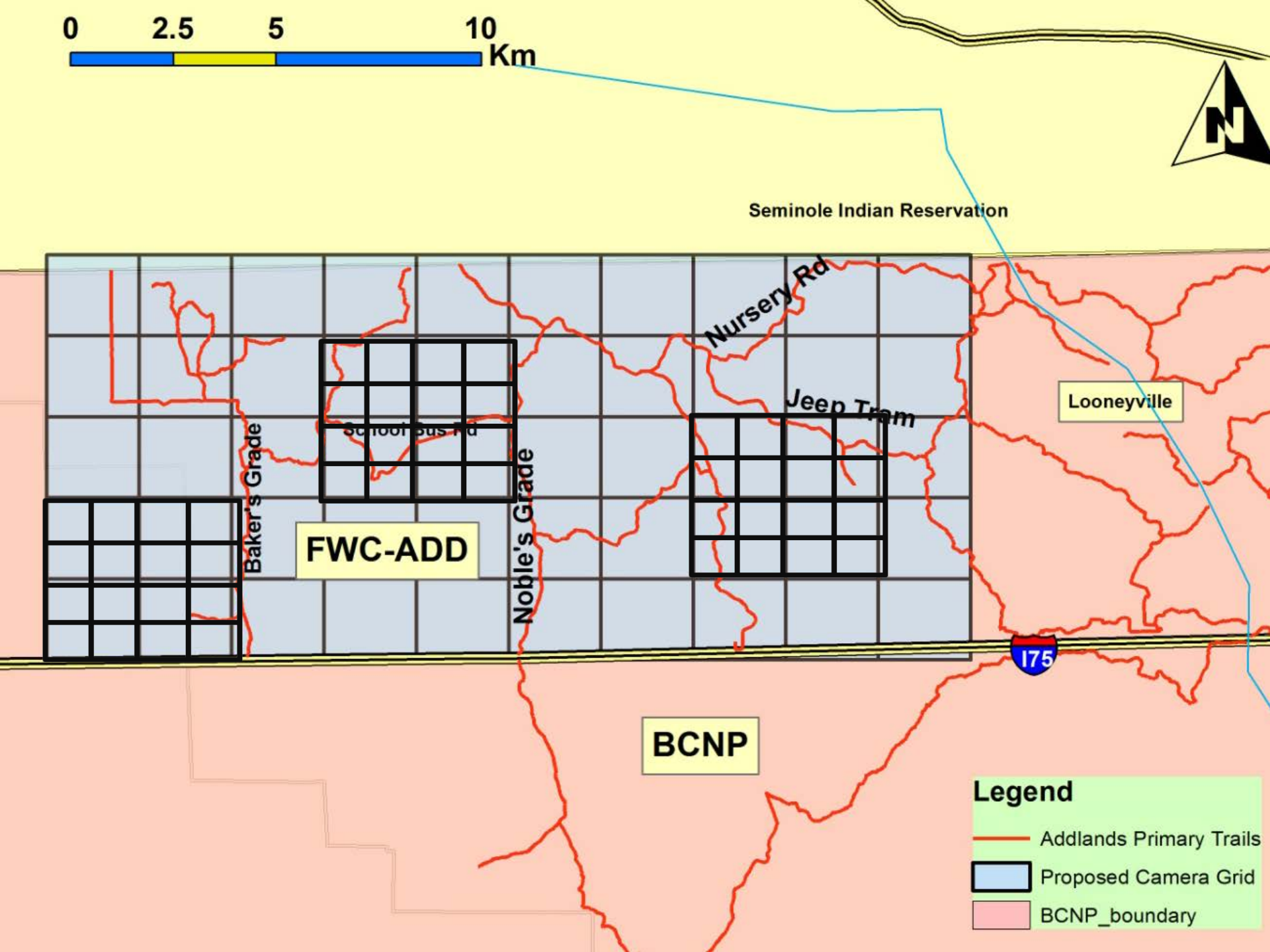
- Existing camera data to develop initial trapping configuration
- Radio-collared deer: movement to fine-tune the study design
- Deployment: current grids in place, Bear Island Fall/Winter 2014

Remote-camera surveys also provide:

- Recruitment estimates
- Fawn:doe ratio, Buck:Doe ratio
- Fawning period, antler casting
- Activity patterns
- Panther population estimates
- Other predator/prey species monitoring


Photos by David Shindle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Addlands Primary Trails
Proposed Camera Grid
BCNP_boundary

Combining Multiple Sources of Data

- Radio-telemetry data: Direct monitoring of individual deer (bucks, does)
  - Precise location and behavioral data
  - Home-range size
  - Survival rates and causes of mortality

- Remote-camera data: Large scale, survey of the overall area, the “entire” deer population along with panthers and other wildlife

- Auxiliary data: panthers, other predators, hydrology, habitat, hunting season, harvest rates, etc.

- **Combined**: Comprehensive design that provides the necessary building blocks for population models (e.g. survival analyses, density estimates) and study design for future surveys (e.g. camera grid density).

Outcomes :

- Up-to-date information regarding what factors drive South FL population levels for deer – primary prey of the panther and number one game species for hunters
- Cutting-edge population survey method for deer: estimates that allow reliable monitoring of population changes and simultaneous monitoring of multiple species (including panthers)
- Potential calibration of historic long-term aerial survey datasets
- Science-based management

Questions?


Photo by David Shindle
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