

Movement, home range and population estimate of white-tailed deer on Bald Head Island, North Carolina

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Background

- White-tailed deer, in the absence of predators or other reproductive controls, can have detrimental effects on forests and other ecosystems through over-grazing.



- This can also have negative impacts on the population itself.

Background

- White-tailed deer on Bald Head Island
 - Population increase
 - Concerns about potential habitat degradation
 - Lethal control measures
 - Non-lethal control
- Certain information is needed before non-lethal population control methods can be implemented.
- Therefore.....

Objectives

- Determine if female white-tailed deer move on or off of Bald Head Island.
- Assess seasonal movements of radiocollared individuals and estimate home range and core areas.
- Estimate population size through spotlight surveys and population reconstruction models.
- Outreach and education.

Objectives

- Evaluate habitat selection of white-tailed deer.
- Assess presence of diseases.



Study Site

- Bald Head Island:
 - Approx. 1200 acres (upland)
- Ecology: Variety of plant communities
 - Maritime evergreen forest
 - Maritime shrub thickets
 - Interdune pond & disturbed wet grasslands
 - Salt marsh
 - Developed/disturbed areas



Study Site

- NC Coastal Reserve
- Maritime forest
- 190 acres



Chemical Immobilization

- Chemically immobilize deer with Telazol & Xylazine
- Delivery Method:
 - Dan-Inject CO² rifle
 - .22 cal. charge rifle
 - Double-barbed injection darts (equipped with tracking transmitters)



Darting

- Golf Cart
 - Bait stations
 - Active searches (opportunistic)



Darting

- Stand "Hunting"
 - Bait stations
 - Tripod stand
 - Treestands



Data Collection

- Vitals: heart rate, oxygen saturation, respiration rate, temperature.



Data Collection

- Measurements:
 - chest girth
 - hind leg length
 - body weight
 - general health



Data Collection

- Pregnancy/Lactation
- Blood: check for disease
- Ectoparasites



Processing

- Radiocollar
 - Securely fastened
 - Sized for each individual



Processing

- Ear Tags
 - Cattle tag
 - Piglet tag
- Allows for easy sight identification
 - Tracking
 - Spotlight surveys



Release

- Chemically reverse
 - Yohimbine
 - Remain with white-tailed deer until it was recumbent
- Next day: track individual and assess condition



Telemetry

- Equipment:
 - Telonics TR-4 VHF Receiver
 - Two-element antenna
- Telemetry Sessions
 - Conducted twice a month
 - Minimum of two unique locations collected each session
 - Four (+) locations per month



Telemetry

- Visually locate each individual
 - GPS physical location
 - Triangulate if necessary



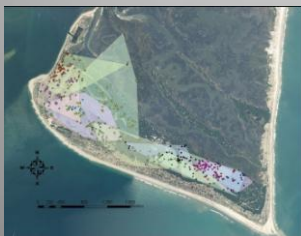
Telemetry

- Data collected:
 - #/Frequency
 - Location (GPS)
 - Activity
 - Weather conditions
 - Habitat



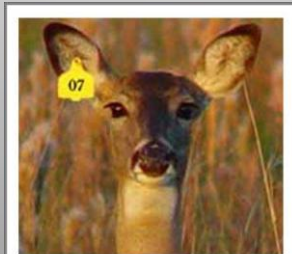
Data Entry

- GPS data entered in Excel
- Data imported to ArcGIS
- Calculate:
 - Home range
 - Core areas



Additional Data

- BHI Conservancy spotlight counts conducted by summer & fall interns.
- Citizen Science: Augment telemetry data with observational data from residents.



Click Here
Report A Tagged Deer

<http://bhideer.com>

Timeline: Darting & Telemetry

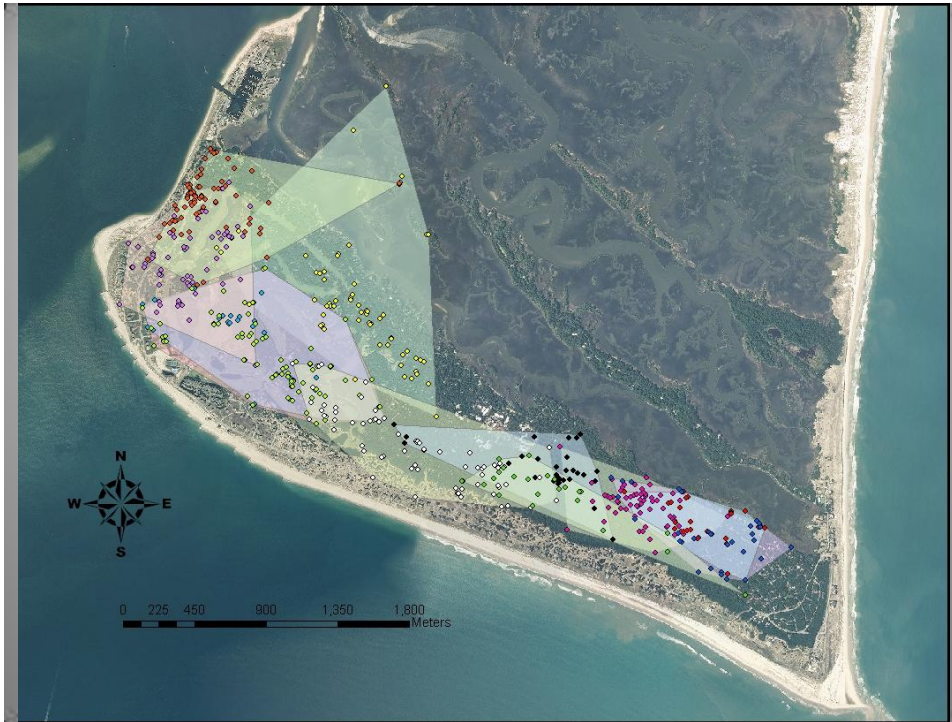
- January – March 2008:
 - Tranquilized and collared 8 white-tailed deer
 - 7 females, 1 male
- January – February 2009:
 - Tranquilized and collared 5 white-tailed deer
 - 5 females
- January 2008 – Present:
 - Bimonthly telemetry sessions

As of November 2009

- Currently tracking 10 female white-tailed deer
- Mortality
 - 1 male; unknown
 - 1 female; vehicle collision
 - 1 female; unknown
- Survival Rate
 - ~ 0.7292

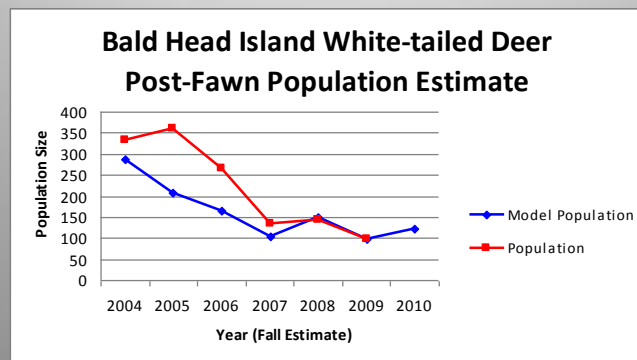
As of November 2009

- All radiocollared white-tailed deer remain within vicinity of Bald Head Island.
- Home range:
 - Average = 71.74 ha (177 acres)
 - Range = 26.63 – 157.65 ha (66 -390 acres)



Population Estimates

- For 2009/2010:
 - ~99 white-tailed deer on BHI
 - 52 white-tailed deer/sq. mile



Outreach and Education

- Community
 - Provide updates to the public/Village of BHI
 - Educate residents and visitors
- NCSU and UNCW
 - Undergraduate & graduate education
 - Participation in field research
 - Provided instruction on telemetry techniques

Conclusion

- White-tailed deer population appears to remain resident on Bald Head Island.
- Impacts for management?
 - Home ranges similar to other urban white-tailed deer populations.
 - Population relatively high.

Future

- Analyze of blood samples for disease.
- Assess habitat use of BHI by white-tailed deer.
- Publications/reports.
- Continued updates and/or presentations.

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- All other students/volunteers
- Numerous BHI residents