



Wildlife-vehicle collision frequency of white-tailed deer (*Odocoileus virginianus*) in association with temporal variation in central Wisconsin

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INTRODUCTION

- As wildlife populations grow, damage on vehicles (Messmer 2009), motorist injuries (Hurley et al. 2009) and fatalities (Mastro et al. 2008) increases.
- The white-tailed deer's (*Odocoileus virginianus*) breeding season occurs amidst the fall season, generally peaking in November (Hubbard et al. 2000).
- We hypothesized differences in frequency (number of deer/km) of roadkill deer each week associated with temporal progression.
- Results from this study contained management implications regarding deer vehicle collisions (DVCs) and educational initiatives that can be observed in the discussion.

METHODS

- Study took place in several counties across central Wisconsin within a 48.28-kilometer buffer around the city of Stevens Point, WI
- Ten independent 55 mph roads designated as County Roads and one state highway. Selected roads accounted for 60.08 kilometers of road within study area.
- Road selection based on ability to identify relatively straight 8-16km road sections with similar vegetation (forested, agriculture, or limited residential).
- During surveys, students drove the posted speed limit and followed all traffic laws, staying on the same road for 8-16 kilometers while looking for visible roadkill deer on the road, shoulder of the road, or ditches.
- Data collected included: date, time, weather, road name, starting point coordinates, speed limit, kilometers traveled, and number of roadkill deer seen. Specific data on individual deer (sex and habitat type) was also collected.
- Habitat type was determined by observing the immediate area near the roadkill deer.
- Process of data collection was repeated once a week (October 2020 – November 2020) by each student, via personal vehicle, for 5 weeks.

RESULTS

- Used a simple linear regression to determine if the number of roadkill deer could be explained by Julian Calendar day.*
- Results showed no significance ($p = 0.27$) between the two variables. (**Figure 1**)
- Of the 27 individuals found, 11 males, 15 females, and 1 unknown sex were recorded. Fifteen individuals were found in agricultural habitats, 11 in forested areas, and 1 in marsh habitat (**Figure 2**).

*Data from week 1 was used as a baseline for the following 5 weeks of data collection and was not counted in result calculations.

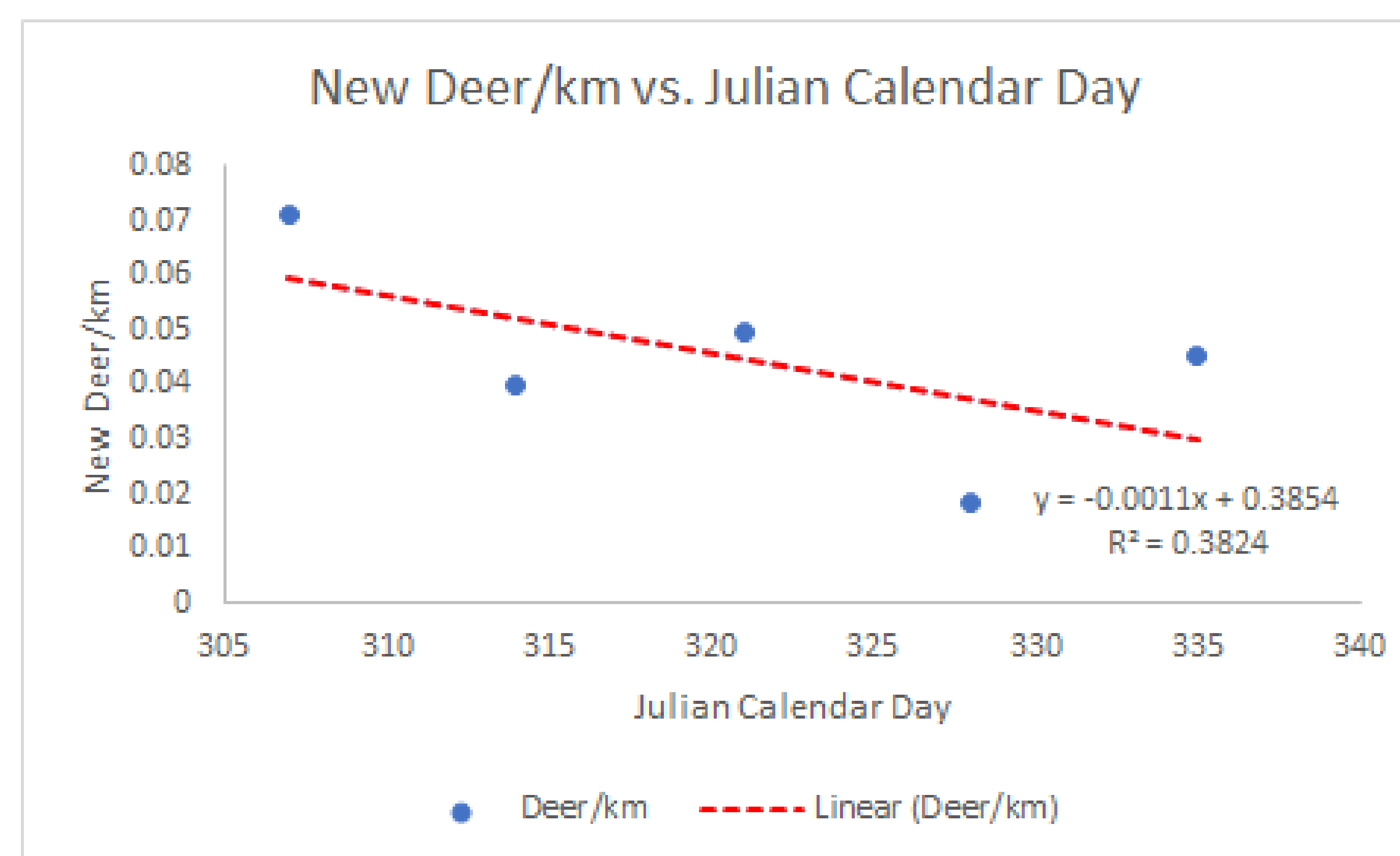


Figure 1. Regression line depicting relationship between roadkill deer frequency and Julian Calendar day (Oct. - Nov. 2020; $p = 0.27$).



DISCUSSION

Study Limitations:

- Limitations for consistent detection rates could include low road shoulders, deep ditches, deer hit on road but not visible from roads, deep snow, and dense vegetation.
- Motorists disobeying posted limits and variation in traffic volume may affect DVCs rates.
- 9-day gun deer season likely altered deer movement (95,257 deer were harvested during the first weekend of the gun season and a total of 188,712 for the entire 9-day season (WNDR 2020 F).)
- On average, roadkill deer remained on roadways/ditches for 2.86 weeks. Our study did not account for removal of carcasses by predators, motorists, or county cleanup crews.

Management Implications:

- Biologists could consider increased antlerless tags in DVC hotspots to sustainably reduce population.
- Formulation of an educational initiative to increase motorist awareness of deer movements and behaviors during fall.
- Management of roadside vegetative cover could help increase visibility in DVC hotspots.

Future Considerations:

- Future studies should focus on acquiring data from more roads in a larger study area to mitigate the likelihood of type II errors.
- Survey roads throughout the year to determine peak risk for DVCs and repeat survey yearly.
- Measure traffic volume to see if there are correlations between traffic and DVCs.
- Survey different roads (i.e., broader range of speed limits, sinuosity, habitat, etc.).
- Look for potential age differences of roadkill deer.

Literature Cited

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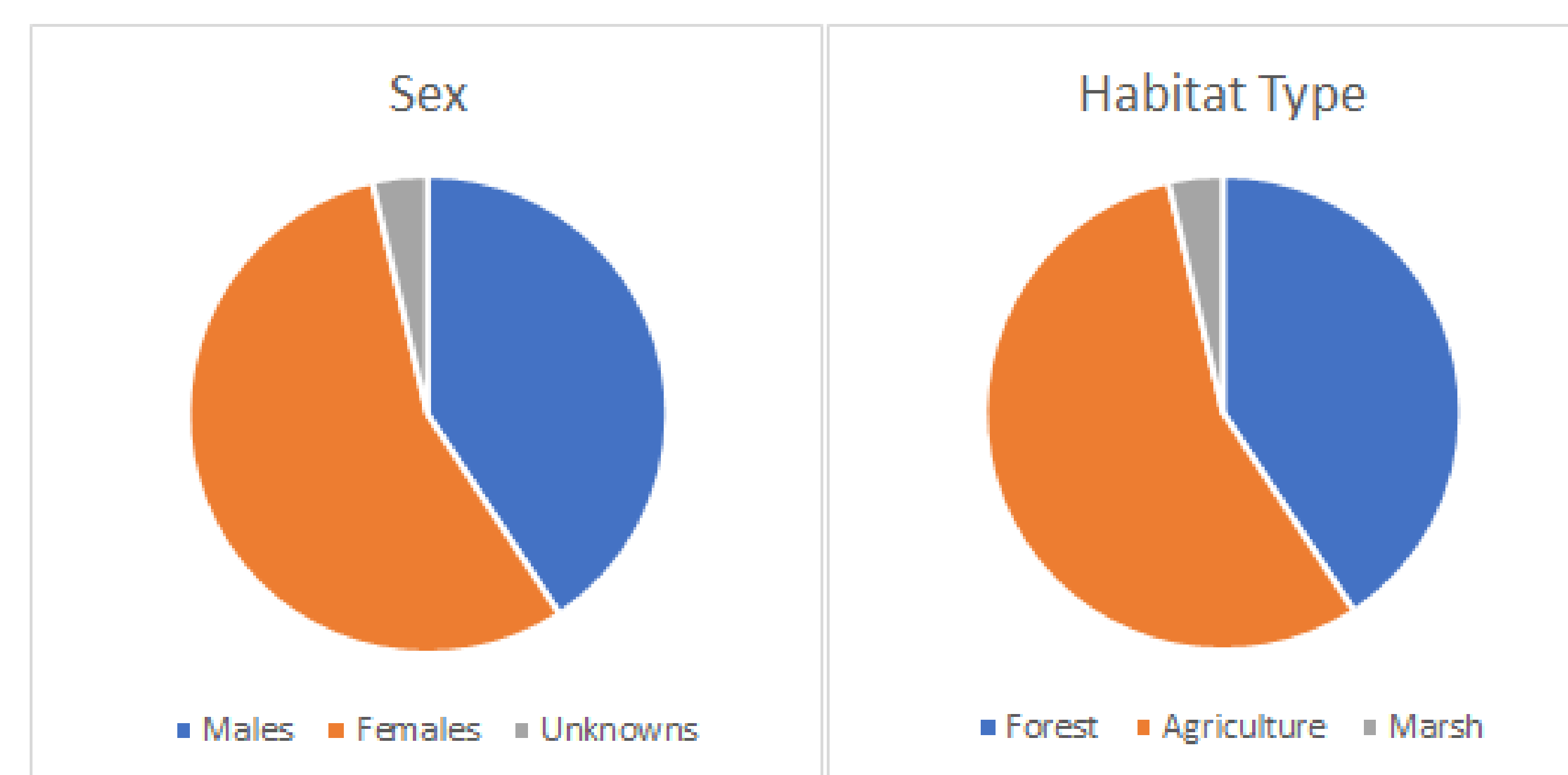


Figure 2. Sex ratios and immediate habitat types were recorded for each observed roadkill deer during Fall 2020.

