

COMPARISON OF SURVIVAL ESTIMATES USING AGE-SPECIFIC MORTALITY AND RADIOTELEMETRY DATA FOR FLORIDA KEY DEER

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INTRODUCTION

> Estimating wildlife population demographics is an important component in construction of simulation models used to predict population trends. Many methods for estimating survival exist, however, each of these methods have their own benefits and problems. Estimating survival from radiotelemetry or mark-recapture data, for example, can provide precise estimates under mild assumptions yet often at great expense.

> Life tables can be used to estimate age-specific mortality or survival from an assumed cohort using age-of-remains data. Although data collection for life tables also can be expensive, some agencies such as the U. S. Fish and Wildlife Service (USFWS) National Key Deer Refuge (NKDR) routinely collect deer mortality data which could be a cost-effective way to estimate important population parameters for use in managing Key deer populations.

> Our research objectives were to evaluate the use of USFWS Key deer mortality data as an alternative method for calculating survival by (1) estimating Key deer survival using USFWS Key deer mortality data, and (2) comparing these survival estimates to previously published survival estimates based on radiotelemetry data.

METHODS

> Life tables were constructed by sex and age using the USFWS mortality data collected from 1995-2000.

> Sex- and age-specific survival was estimated for north and south Big Pine Key assuming a stable age distribution and an instantaneous population growth rate of 0.00.

> We believe that the deer population on BPK has a stable age distribution because there is no evidence of major variation in mortality or recruitment rates. We estimated the Key deer population growth rate using USFWS survey counts.

> For comparison purposes, we calculate survival for fawns (< 1 year of age) and yearlings/adults using a weighted mean by grouping carcasses aged ≥ 1 year.

> Survival estimates, standard errors, and confidence intervals were computed using the program SURVIV.



RESULTS

> A total of 506 deer mortalities was recorded by USFWS biologists from 1995-2000.

> Key deer survival estimates derived from life tables were similar to rates calculated from radiocollared deer (Fig. 1).

> The only exception was for yearling/adult females on NBPK where the life table estimate was only slightly outside of the 95% confidence interval for the radiotelemetry estimate.

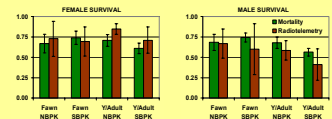


Fig. 1. Annual Key deer survival estimates (mean, 95% CI) using mortality and radiotelemetry data by sex and age group on north Big Pine Key (NBPK) and south Big Pine Key (SBPK), Florida.

CONCLUSION

> We found life table survival estimates to be similar to those derived from radiotelemetry data, suggesting an alternative for estimating survival of Key deer.

> The long-term monitoring of Key deer mortality by USFWS biologists offers managers such an opportunity.

> In our study, comparing results from both methods allowed us to evaluate potential biases due to violation of assumptions associated with life table calculations.

> While wildlife managers should be aware of the potential biases associated with life table calculations, age-specific mortality data may provide an adequate and cost-effective alternative for estimating survival.