

Summer Deer Observations 2008

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Abstract

Fawn:doe ratios (FDRs) in the Northern (0.65) and Central Forest (0.71) regions were near record historical lows. Reasons for these patterns are speculative but are likely associated with moderate to severe winter conditions during winter 2007-08. Similarly, lower FDRs throughout the Farmland regions also suggest that winter effects may have impacted subsequent fawn production and survival in Wisconsin's farmland deer populations.

Introduction

Road sampling is a widely used survey method for obtaining observations of abundant big game species over large geographic areas. Road sampling yields estimates of population characteristics important for management decisions, so obtaining the best estimates possible within the constraints of available resources (time and money) is desirable. Despite known biases and under-representation of habitat types, road sampling is commonly used for estimating white-tailed deer population trends, herd composition, and annual recruitment throughout much of North America. Due to low cost and relatively simple implementation, this technique has been used by the Wisconsin Department of Natural Resources (WDNR) for estimating summer FDRs across broad geographic regions of Wisconsin since the 1960s. Due to sampling limitations, FDRs are estimated for 13 groups of management units across the state. Though no bias-free measure has yet been developed for measuring net addition of fawns to the fall deer population, roadside summer deer observations have tended to produce values that match expectations in the forested regions of Wisconsin. Thus, for northern management units, annual observed FDRs are used as parameter inputs in WDNR's Sex-Age-Kill deer population estimation procedures. Because of small samples in farmland zones and seemingly low (i.e., negatively biased) observed FDRs relative to other measures of recruitment (i.e., yearling doe percents), fixed (FDR) constants are used for SAK in these units.

Methods

The WDNR and cooperating U.S. Forest Service and U.S. Fish and Wildlife Service personnel recorded deer observations during July, August, and September during normal duty travels during 2008. Deer observed during daylight hours were recorded by month and management unit. Deer observations also were identified as adult bucks, does without fawns, does with one, two, and three fawns, fawns without does, and unidentified. The number of fawns observed per doe was calculated by unit group (Figure 1) and the total numbers of fawns and does reported throughout the summer (July-September) was used to calculate summer-long FDRs for each unit group, despite recognition that July observations negatively bias FDRs compared to August and September FDRs; negative bias associated with July observations is likely due to adult does hiding their fawns through early July.

Results

Field staff observed 6,448 deer (3,714 does and 2,734 fawns) during summer 2008 (Figure 2). The number of summer 2008 deer observations was substantially (23%) lower than the number of deer observed during 2007 ($n = 8,431$) and 2006 ($n = 8,349$). Interestingly, 2008 summer

deer observations are 47% and 12% lower than the 10-year and long-term averages, respectively. Steep changes in the numbers of deer reported are likely due to deliberate efforts to bolster participation in the survey followed by declines in observations caused in part by budget constraints and fewer personnel and miles-driven in recent years. However, a decline in summer deer observations between 2007 and 2008 is likely related to moderate to severe winter conditions throughout Wisconsin during 2007-08, which appears to have reduced fawn production and herd sizes throughout most regions of the state.

Statewide, the 2008, long-term (1960-2008) and 10-year (1998-2007) mean fawn doe ratios were 0.73, 0.87, and 0.87, respectively (Table 1). The FDR in the Northern Forest (Unit Groups A-H; Figure 1) averaged 0.65, was a near-record low, and was well below the 10-year and long-term averages (0.80; Figure 2). Additionally, the Central Forest (Unit Group L; Figure 1) recorded the third lowest ever FDR (0.71; Table 1). Reasons for regional declining trends (Figure 2) remain unclear but likely reflect moderate to severe winter conditions during winter 2007-08 throughout the state. Additionally, declining regional trends in FDRs may be associated with deer herd densities relative to ecological carrying capacity in portions of the Northern and Central Forest regions. Female deer in high population units are less likely to achieve their normal reproductive output.

The 2008 FDRs in the Farmland Regions (Unit Groups J, K, M, and N; Figures 1 and 2) averaged 0.95, and matched the long-term and 10-year averages of 0.95 and 0.98, respectively. However, FDRs declined in all four farmland unit groups (J, K, M, N) between 2007 and 2008 (Table 1). Weak relationships between observed FDRs and other measures of herd recruitment (yearling buck harvest, yearling doe harvest, percents, percent forked antlers) in the farmland unit groups makes it necessary to continue using fixed FDRs in current deer population estimation procedures. Fixed FDRs are derived largely from long-term yearling doe percents as observed during annual fall harvest.

While no measure of winter severity is recorded throughout the farmland regions of Wisconsin, severe winters occasionally impact fawn production in the southern half of the state. Record levels of snowfall were recorded in southern Wisconsin during winter 2007-08 and numerous reports of distressed and dead deer (particularly fawns) were reported throughout the region, suggesting that winter effects also may have impacted subsequent fawn production and survival in farmland deer populations. Regional declines in 2008 FDRs likely reflect a winter effect that suppressed deer population growth throughout Wisconsin. Farmland summer deer observations continue to be evaluated as WDNR Study 025: Evaluation of deer population monitoring and management system. This study continues to explore and develop measures to improve the WDNR deer survey and its interpretation.

Acknowledgments

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Table 1. Fawn:doe ratio by management unit groups, 1991-2008.

Year	Management Unit Groups													Statewide
	A	B	C	D	E	F	G	H	J	K	L	M	N	
1991	0.79	0.78	0.68	0.90	0.90	0.69	0.89*	0.70	1.24*	0.82	1.07	0.79	0.76*	0.81
1992	0.48	0.64	0.63	0.78	0.82	0.74	0.51	0.59	1.15	0.92	0.91	1.17*	1.09	0.77
1993	0.92	0.90	0.87	0.81	0.99	0.91	0.83*	0.80	0.93	0.86	1.06	1.08	1.07	0.93
1994	0.91	0.90	0.98	0.91	0.87	1.02	1.11*	0.91	0.88	1.00	1.14	0.92	1.00	0.96
1995	0.88	0.89	0.88	0.97	0.88	1.01	0.94	0.76	1.05	0.94	1.11	0.96	1.24	0.94
1996	0.60	0.70	0.51	0.75	0.64	0.81	0.69*	0.43	0.81	0.74	0.79	0.92	0.81	0.71
1997	0.75	0.90	0.67	0.81	0.71	0.72	0.61*	0.86*	0.93	0.95	0.81	1.09	0.70	0.80
1998	0.91	0.91	0.78	0.95	1.00	1.05	0.53*	1.02	0.95	1.12	0.86	1.27	1.07	0.94
1999	0.81	0.91	0.85	0.85	0.86	0.97	0.76	0.81	1.10	1.04	0.93	1.23	1.10	0.92
2000	0.76	0.85	0.77	0.87	0.82	0.94	0.79	0.76	1.02	1.02	0.92	0.99	0.96	0.87
2001	0.69	0.83	0.76	0.74	0.79	0.94	0.82	0.79	1.03	0.92	0.78	1.04	0.97	0.84
2002	0.90	0.81	0.87	0.82	0.74	0.97	0.85	0.67	1.04	0.95	0.91	0.94	1.23	0.90
2003	0.70	0.88	0.70	0.69	0.70	0.98	0.81	0.82	0.88	0.88	0.72	0.84	0.95	0.80
2004	0.63	0.75	0.74	0.70	0.69	0.88	0.56	0.65	1.06	0.76	0.64	0.87	1.01	0.80
2005	0.74	0.88	0.72	0.84	0.81	0.96	0.65	0.69	1.10	0.81	1.12	0.89	1.07	0.86
2006	0.52	0.86	0.74	0.89	0.89	0.93	0.80	0.66	1.00	0.99	0.86	0.85	1.11	0.86
2007	0.58	0.68	0.72	1.05	0.67	0.95	0.67	0.68	1.25	0.95	0.80	1.07	1.07	0.86
2008	0.47	0.78	0.62	0.86	0.63	0.79	0.38	0.62	1.01	0.79	0.71	0.87	0.91	0.73
Long-term Average														
1960-2008	0.76	0.83	0.73	0.83	0.84	0.84	0.76	0.82	1.01	0.90	0.93	0.99	1.02	0.87
10-year Average														
1998-2007	0.72	0.84	0.76	0.84	0.80	0.96	0.72	0.75	1.04	0.92	0.85	1.00	1.05	0.87

*Ratios computed from relatively small sample sizes ($48 \leq$ adult doe observations ≤ 99).

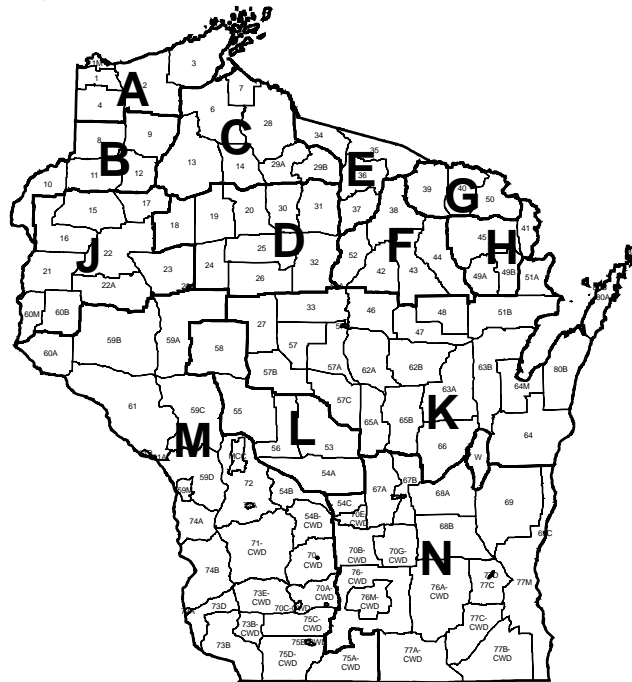


Figure 1. Groups of deer management units used for 2008 summer deer observations.

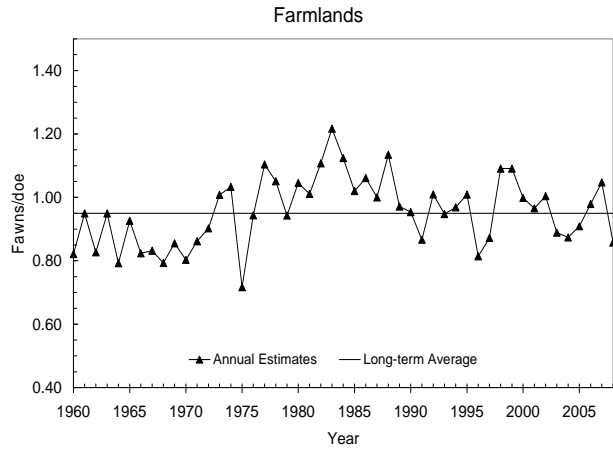
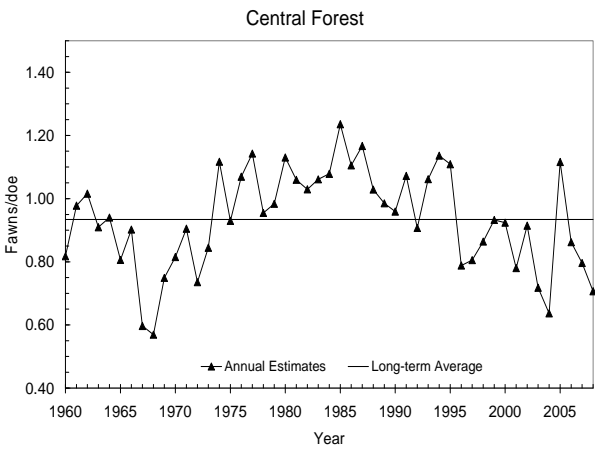
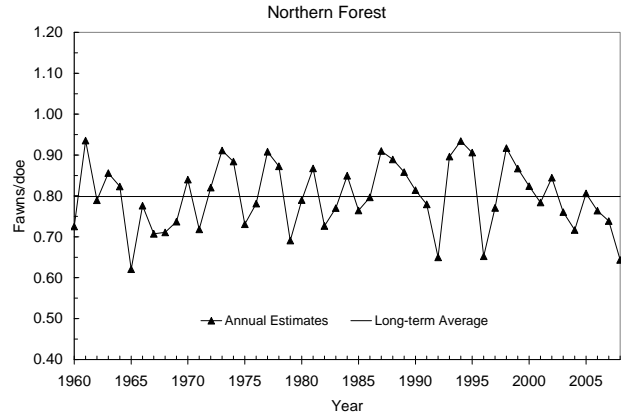
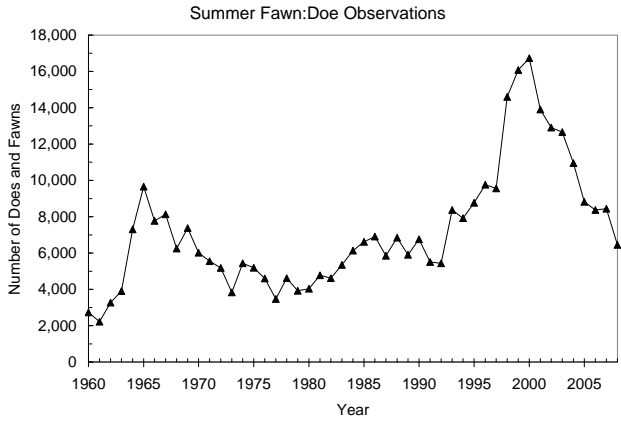


Figure 2. Summer deer observations (upper left) and regional trends in fawn doe ratios in the Northern Forest (upper right), Central Forest (lower left), and Farmland (lower right) regions of Wisconsin, 1960-2008.