

## Assessment of Deer Harvest Reporting Systems in the Eastern United States

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State wildlife managers use information from hunters to produce estimates of white-tailed deer (*Odocoileus virginianus*) populations (Brown & Decker, 2000). Estimation methods include direct (e.g., check stations) and indirect (e.g., mail questionnaires, report cards, telephone interviews) approaches. Direct methods are believed to minimize recording errors and dishonest reporting, but are more expensive than indirect methods. To enhance the quality of the indirect data collection efforts, wildlife agencies have: (a) attempted to increase response rates and sample sizes, (b) redesigned forms and reporting options, and (c) incorporated incentives and public relations (Rupp, Ballard, & Wallace 2000). Hunter noncompliance with reporting methods, however, results in inaccurate and unreliable harvest estimates. The variance in most state harvest reporting systems is considered too great to be reliable (Rosenberry, Diefenbach, & Wallingford, 2004).

We surveyed white-tailed deer managers in 31 central and eastern states to determine: (a) various methods of deer hunter harvest reporting and (b) managers' perceptions of hunter understanding of population estimation procedures and importance of harvest reports in calculating deer populations. The self-administered Internet survey was conducted during February 2009. Deer managers were sent an e-mail with an introductory letter and a link to the 19-item questionnaire. Reminder e-mails were sent two weeks after the initial e-mail, and then one week later. Twenty-three state deer managers (82%) responded to survey. Three states were unable to be reached via e-mail after multiple attempts, and five did not respond.

Mandatory check stations (70%) were the most common reporting method, followed by Internet reporting system (44%), telephone survey (39%), and mail-in system (13%) (percentages total greater than 100% due to multiple options within the same state). Three-quarters (77%) reported that their state had penalties associated with noncompliance. No state required hunters to report effort when no harvest had occurred. Most managers ( $n = 11$ ) believed their noncompliance rate to be below 20%, and slightly less than half (46%) of those managers used check stations as the method to gather harvest data (Table 1). Almost one-third of managers perceived noncompliance rates greater than 50%. Two managers reported Internet surveys as 81–99% unreliable, and one reported check stations to be 100% unreliable. Five managers did not respond to the question regarding estimates of noncompliance. Reporting type among the five missing responses included one Internet, three check stations, and one used both Internet and check stations. Although 95% of managers

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**Table 1**  
 Manager estimates of noncompliance rates for reported deer harvest  
 by reporting method ( $n = 18$ )

Reporting method	Perceived percent noncompliance						
	0	1–20	21–40	41–60	61–80	81–99	100
Mail					1		
Phone		2					
Internet						2	
Check station			5				1
Phone/Internet		4					
Mail/Phone/Internet			2				
Phone/Internet/Check station	1						

Cell entries refer to number of deer managers.

thought hunters did not understand the process of estimating populations, 91% believed that hunters understood they were an important component of the process.

Although deer biologists employ various methods to estimate populations (e.g., mark-recapture techniques, fawn survivorship studies, *in utero* doe/fawn ratio studies) in addition to harvest reports, the reports constitute an important component of population estimates. Deer managers must either ignore missing harvest reports or use missing data estimation calculations to determine total harvests based on harvest reports returned by hunters. Optimizing the number of harvest reports received by hunters means greater accuracy in harvest and population estimates. Noncompliance may include response bias that may lead to erroneous harvest estimates, especially in states that permit harvesting multiple deer per season. Moreover, noncompliance may also be related to hunters' perceptions of agency performance, to which harvest and population estimates may contribute.

Managers use deer hunters as a management tool; however, hunters may not fully appreciate the need to cooperate with the management process. Providing hunters with understanding of their role in estimating deer populations may help create responsible hunters who maintain realistic expectations regarding harvest. Further research is needed to investigate reasons for noncompliance and hunter perceptions of deer harvest reporting systems and population estimates. Such studies could provide insight into underlying causes of conflict between state wildlife management agencies and hunting stakeholders.

## References

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