

National Hunter and Species Abundance Data for Resident Game Birds

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AFWA Resident Game Bird Working Group

Background

The Resident Game Bird Working Group's (RGBWG) Work Plan includes the following action item:

"In coordination with species-specific management boards and committees, develop recommendations for monitoring of hunter numbers and annual harvests of resident game birds that is consistent among states and can serve as a reliable range-wide index of population status and hunter participation."

At the September 2016 meeting of the RGBWG, a task force was created to begin work on this item. There was skepticism at the meeting regarding the feasibility of developing consistent hunter and harvest estimation methods among the states, and the task force was asked to first consider what data are currently available to monitor population status and hunter participation.

Findings

Some well-respected and ongoing surveys exist for tracking these items of interest. The North American Breeding Bird Survey (BBS; Sauer et al. 2014) monitors population distribution and abundance of most resident game birds, and the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (NSFHWR; U.S. Department of Interior and U.S. Department of Commerce 1991, 1996, 2001, 2006, and 2011) monitors U.S. hunter numbers, including those of general groups of resident game birds (e.g., wild turkey, pheasant, grouse, and quail).

These surveys are not without some shortcomings, however. The BBS does not provide trend information for lesser prairie-chicken, Gunnison sage-grouse, spruce grouse, ptarmigan species, Himalayan snowcock, Montezuma quail, or plain chachalaca, but the limited distribution of most of these species allows the states to adequately address their monitoring through other means. The roadside counting method and survey dates are also not ideal for detecting a number of species in this group. The NSFHWR only includes U.S. hunters, is only run every five years (starting in 1991 and with 2011 being the most recent), does not collect harvest data, and aggregates hunter number data for groups of species rather than species themselves (except for wild turkey and ring-necked pheasant).

Despite these issues, the BBS and NSFHWR may provide "reliable range-wide (indices) of population status and hunter participation" for most species and/or species groups as per the RGBWG Work Plan. Some information relevant to managers contained in these surveys is provided in Tables 1-3 and Figures 1-6. A few highlights include:

- Long-term (1966-2013) range-wide BBS trends are down for six species (ring-necked pheasant, greater sage-grouse, sooty grouse, northern bobwhite, scaled quail, and gray partridge), up for one species (wild turkey), and stable for the remainder of resident game birds surveyed.
- The number of total U.S. hunters declined, mostly as a result of a decline in small game hunters. Small game hunter numbers declined by more than 168,000 per year during 1991-2011.

- The national percentage of total hunters who are small game hunters declined from 54% in 1991 to 33% in 2011.
- The proportion of small game hunters who hunt pheasants increased, while the proportions who hunt quail and grouse decreased (although the decline for grouse hunters was slight).
- Pheasant hunter numbers declined by an average of 45,000 per year during 1991-2011, even though national pheasant populations were statistically stable during that period.
- Grouse hunter numbers declined by an average of nearly 31,000 per year during 1991-2011, even though national populations of grouse were stable or increasing during that period.
- Northern bobwhite and scaled quail saw the steepest population declines among resident game birds during 1991-2011, and quail hunter numbers showed the largest annual decrease of any group of small game hunters.
- Of the resident game birds, only wild turkey saw an increase in both populations and hunters during 1991-2011. Turkey hunters also made up an increasing percentage of both big game and total hunters over that period. (The NSFHWR classifies wild turkey a big game animal.)

These results lead to a few broader conclusions:

- Efforts to reverse the long-term decline in U.S. hunter numbers will likely fail unless the decline in small game hunters is successfully addressed.
- Declines in pheasant and grouse hunter numbers occurred despite relatively stable national populations of those species during 1991-2011, suggesting factors other than contemporary species abundance may be driving the declines. Changes in turkey and quail hunter numbers seemed to better track population abundance, but other explanatory factors may be involved, as well.

Table 1. Trends (i.e., average annual percentage changes) in population abundance of resident game bird species as measured by the North American Breeding Bird Survey (Sauer et al. 2014). U.S. trends during 1991-2011 correspond to time period covered by National Survey(s) of Fishing, Hunting, and Wildlife-Associated Recreation.

Species	U.S. Trends		Survey-wide Trends
	1966-2013	1991-2011	1966-2013
Wild Turkey	7.96*	10.35*	8.08*
Ring-necked Pheasant	-0.73*	0.12	-0.75*
Grouse			
Greater Sage-grouse	-3.30*	-1.09	-3.30*
Sharp-tailed Grouse	0.76	1.06	0.16
Greater Prairie-chicken	4.13	9.95*	4.13
Ruffed Grouse	0.66	0.21	0.75
Dusky Grouse	3.75	4.75*	2.29
Sooty Grouse	-0.07	0.77	-1.81*
Quail			
Northern Bobwhite	-4.08*	-4.87*	-4.08*
Scaled Quail	-3.01*	-4.63*	-3.01*
Gambel's Quail	-0.59	-0.54	-0.59
California Quail	0.54	1.56*	0.66*
Mountain Quail	-0.85	-1.48	-0.85
Partridge			
Gray Partridge	-2.36*	-3.51*	-1.44*
Chukar	0.84	1.47	0.70

*Significant trend (i.e., 95% Credible Interval does not contain zero, and statistical properties of the species' data were sufficient to produce reliable results as defined by Sauer et al. 2014).

Table 2. Numbers of hunters estimated by the National Survey(s) of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior and U.S. Department of Commerce 1991-2011). Estimated average change per year is the slope of a linear trend fitted to the data, and the annual percentage change is the average annual change divided by the variable's mean.

Year	U.S. Hunters (in Thousands)				
	Total	Small Game	Big Game	Migratory Bird	Other Animals
1991	14,063	7,642	10,745	3,009	1,411
1996	13,975	6,945	11,288	3,073	1,521
2001	13,034	5,434	11,570	2,956	1,047
2006	12,510	4,797	10,682	2,293	1,128
2011	13,674	4,506	11,570	2,583	2,168
Average Change/Year	-44.9	-168.4	20.9	-32.6	22.4
% Change/Year	-0.3	-2.9	0.2	-1.2	1.5

Table 3. Numbers of resident game bird hunters estimated by the National Survey(s) of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior and U.S. Department of Commerce 1991-2011). Estimated average change per year is the slope of a linear trend fitted to the data, and the annual percentage change is the average annual change divided by the variable's mean.

Year	U.S. Hunters (in Thousands)			
	Wild Turkey	Pheasant	Grouse	Quail
1991	1,720	2,285	1,375	1,694
1996	2,189	2,261	1,220	1,487
2001	2,504	1,723	1,010	991
2006	2,569	1,632	800	1,046
2011	3,115	1,474	812	841
Average Change/Year	63.4	-45.0	-30.9	-42.9
% Change/Year	2.6	-2.4	-3.0	-3.5

Figure 1. Trends in U.S. hunters, small game hunters, and big game hunters based on the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior and U.S. Department of Commerce 1991, 1996, 2001, 2006, and 2011).

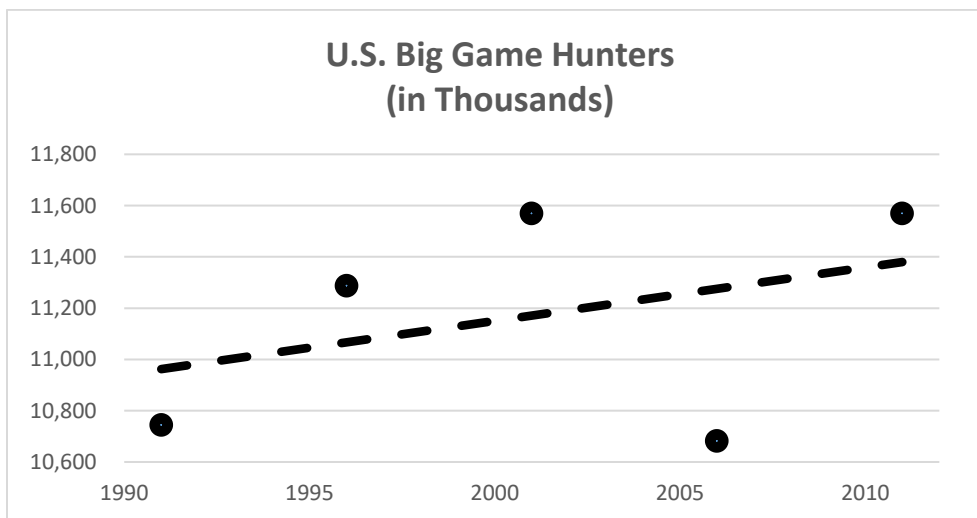
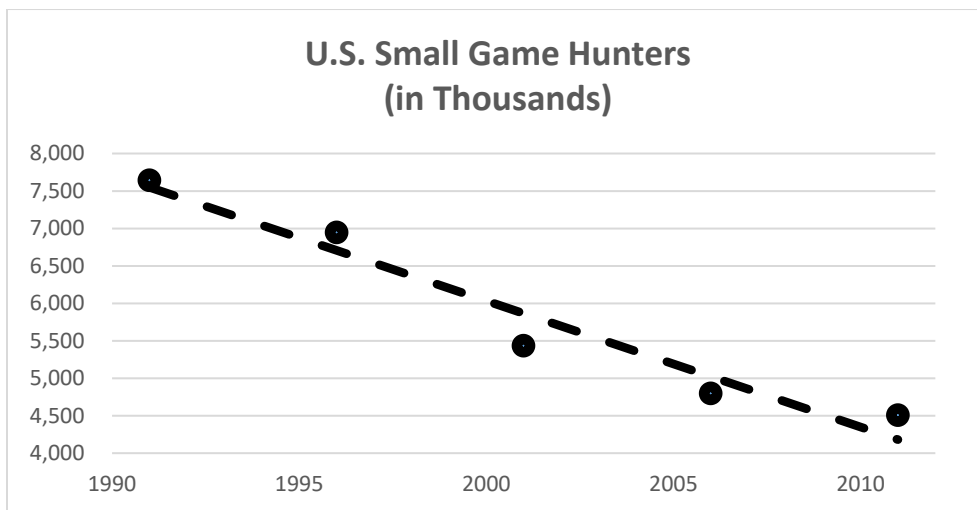
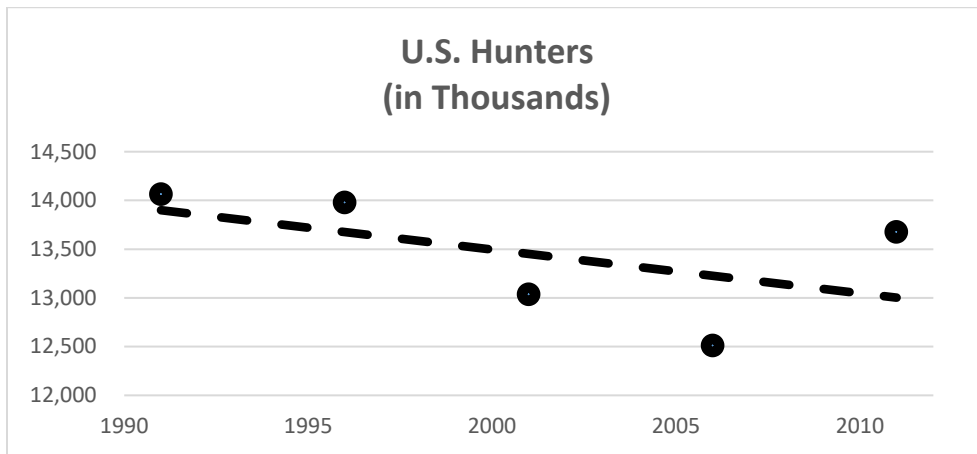


Figure 2. Trends in U.S. small game and big game hunters as a percentage of total hunters based on the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior and U.S. Department of Commerce 1991, 1996, 2001, 2006, and 2011).

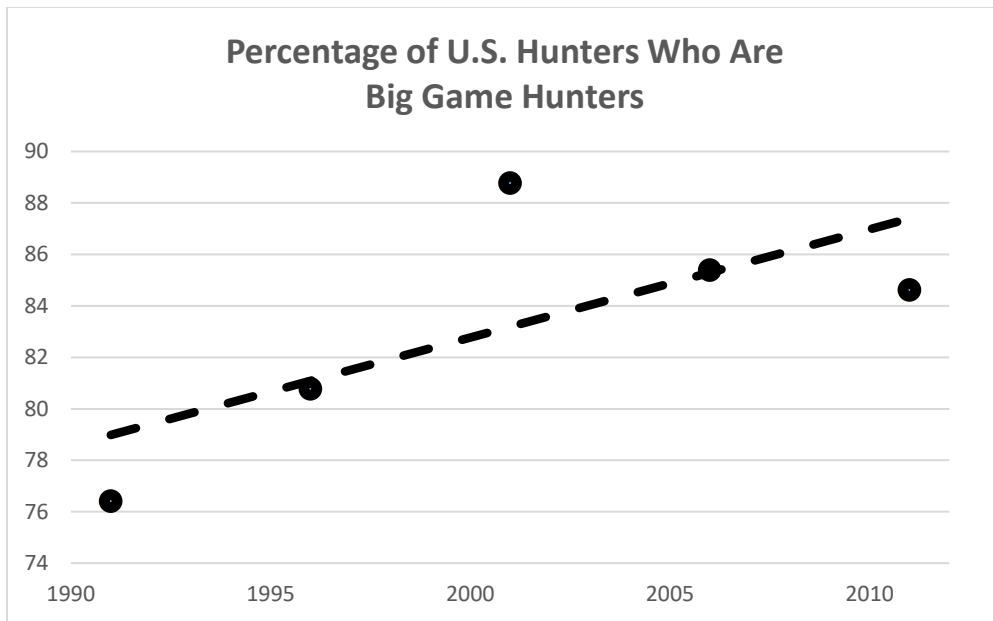
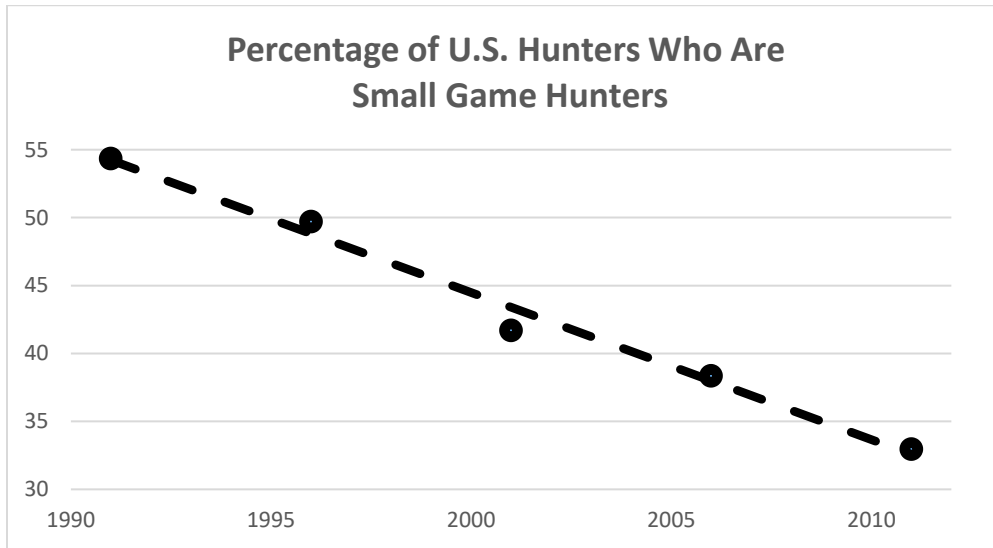


Figure 3. Trends in U.S. wild turkey hunter numbers based on the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior and U.S. Department of Commerce, 1991, 1996, 2001, 2006, and 2011).

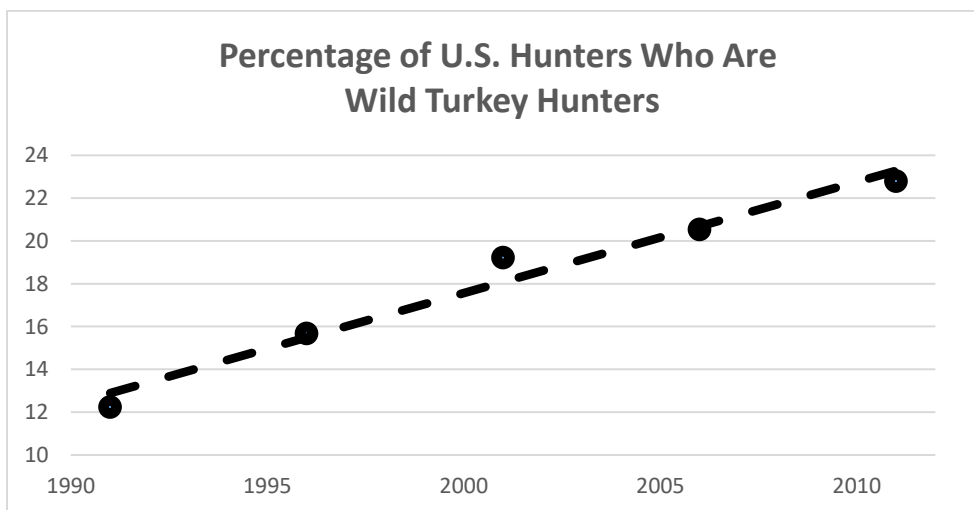
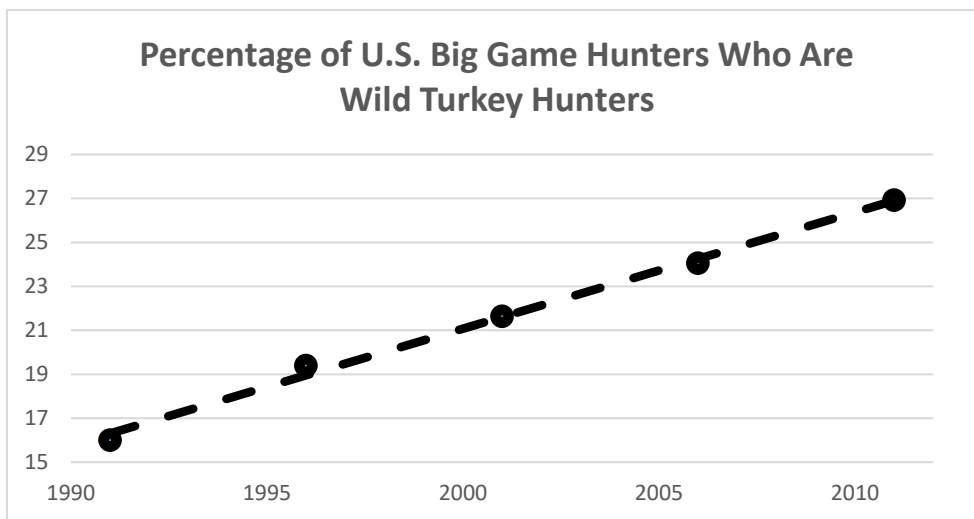
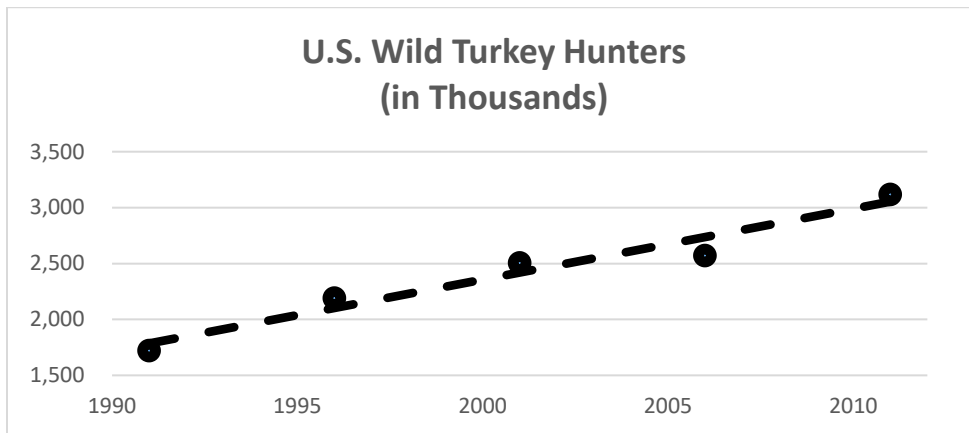


Figure 4. Trends in U.S. pheasant hunter numbers based on the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior and U.S. Department of Commerce, 1991, 1996, 2001, 2006, and 2011).

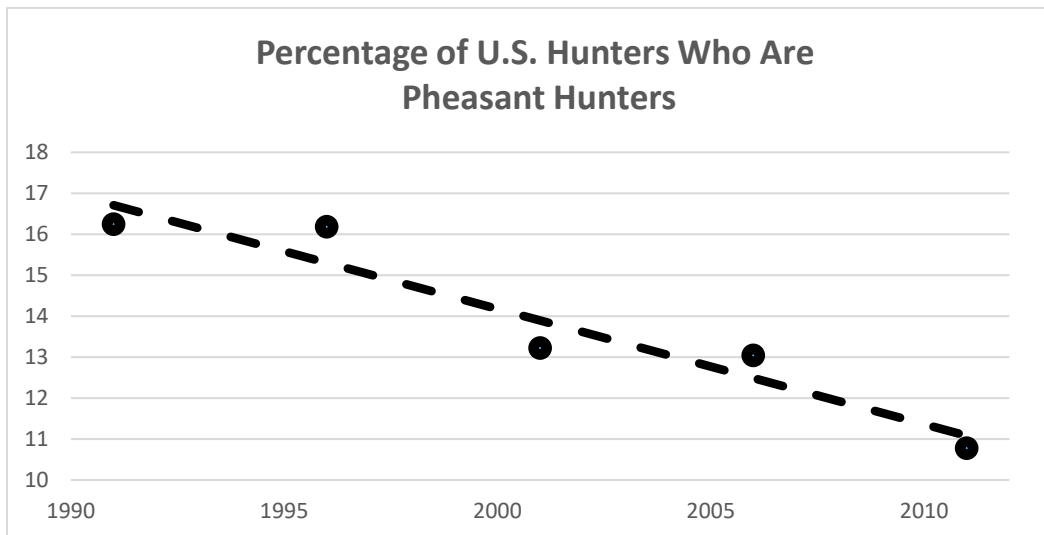
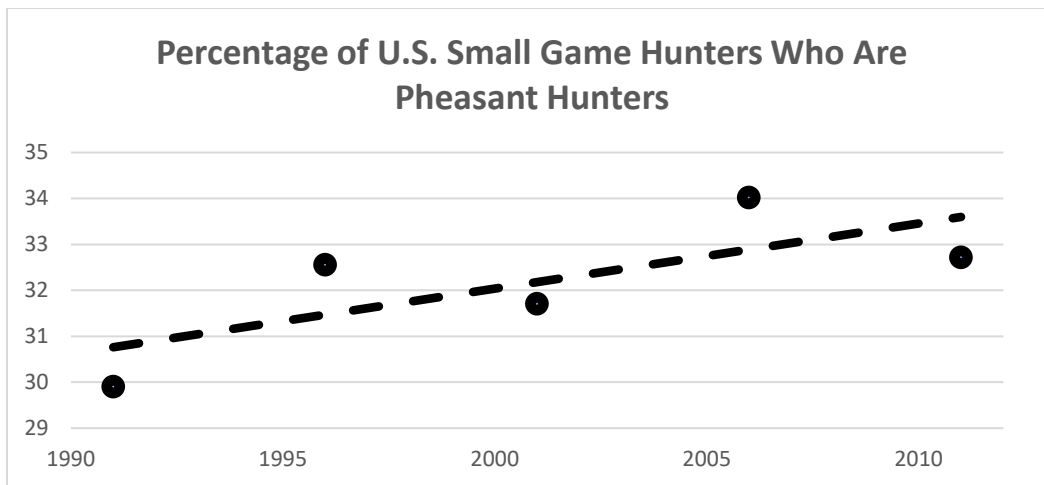
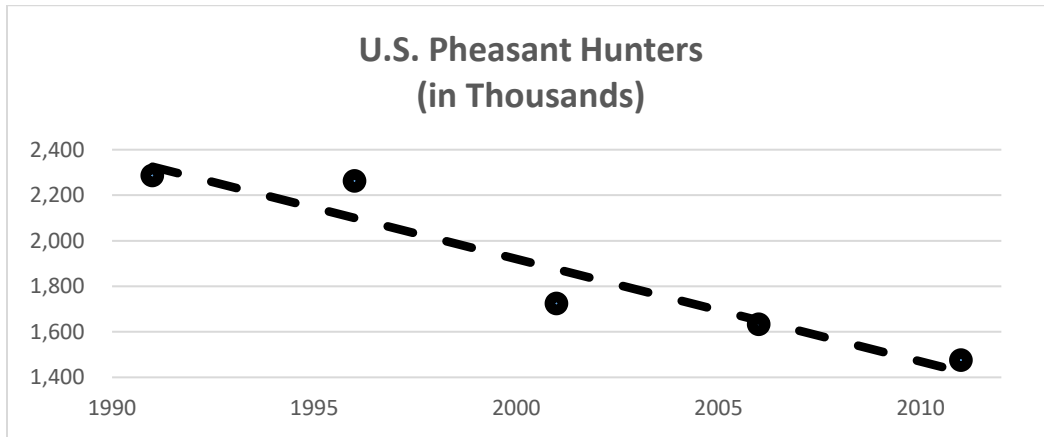


Figure 5. Trends in U.S. grouse hunter numbers based on the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior and U.S. Department of Commerce, 1991, 1996, 2001, 2006, and 2011).

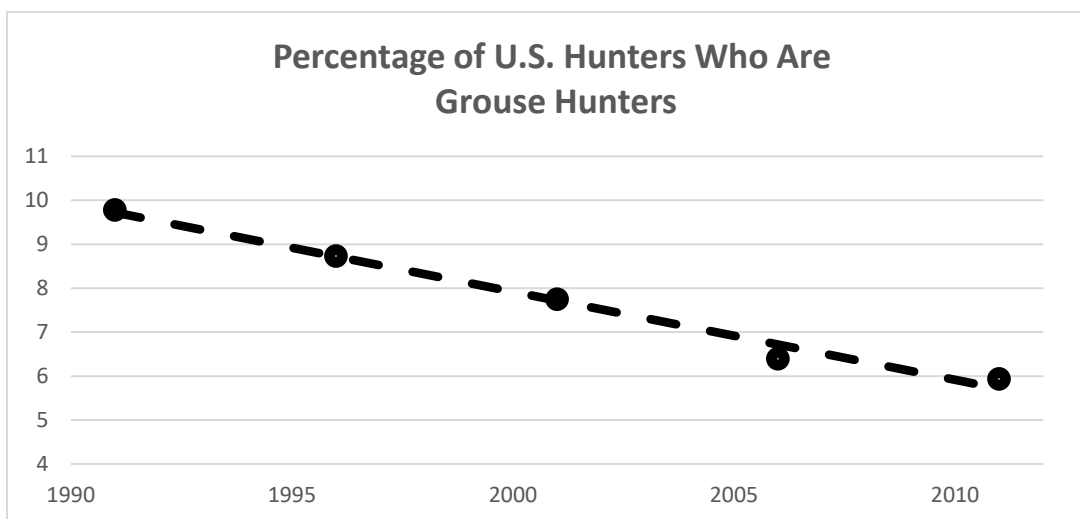
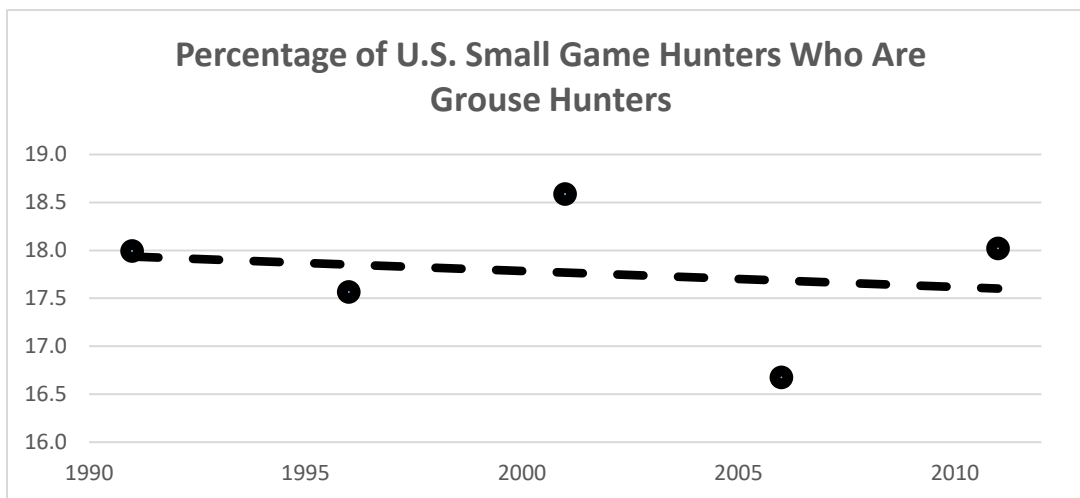
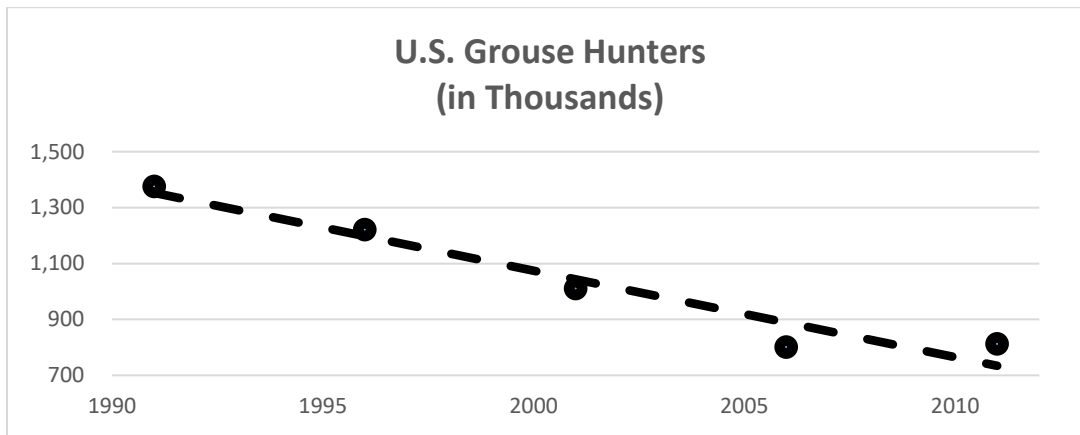
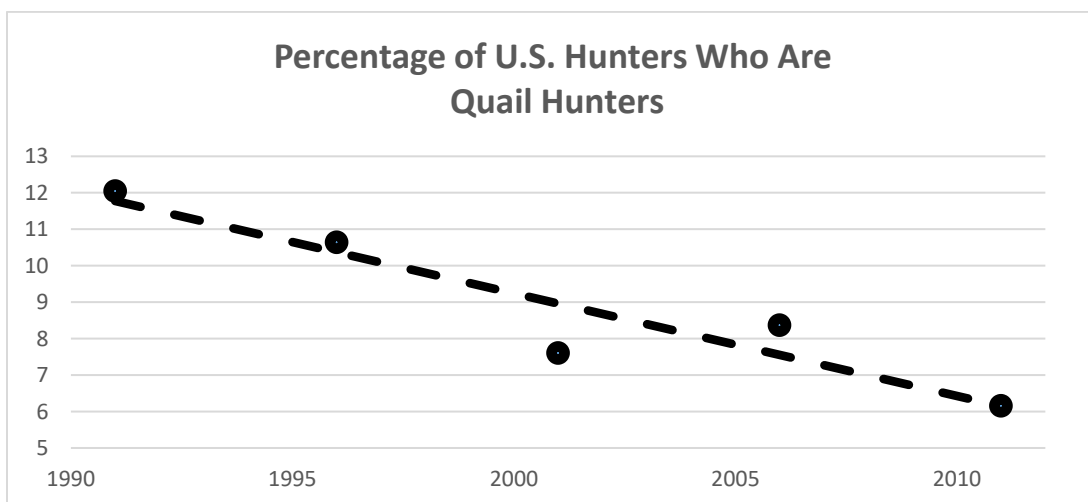
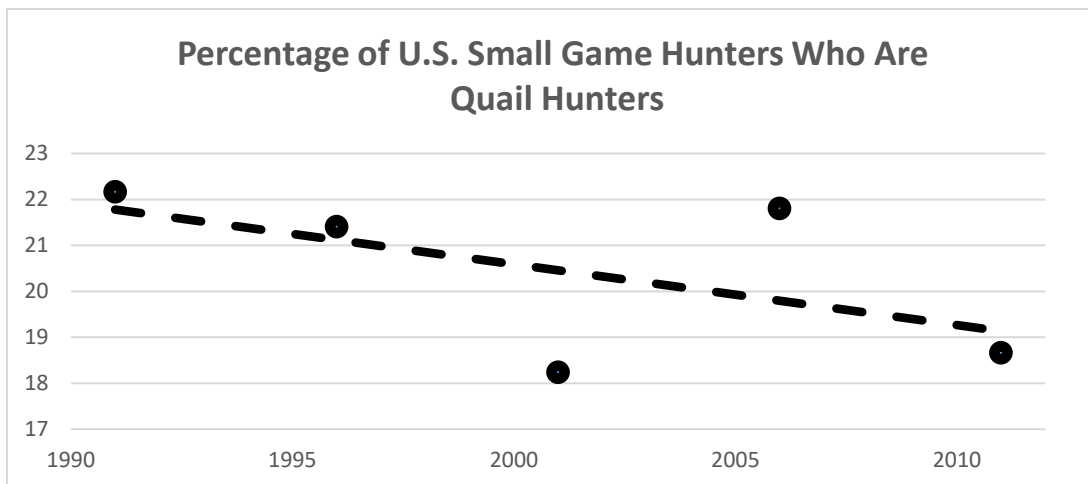
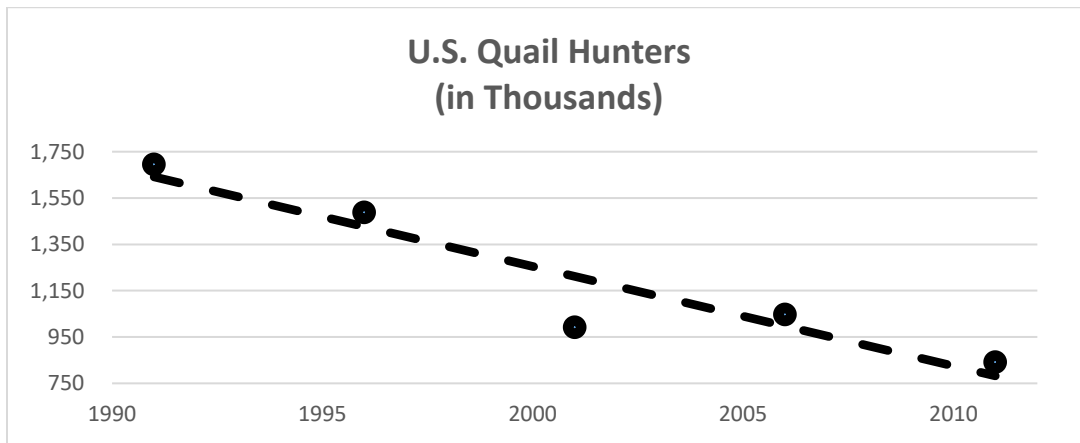


Figure 6. Trends in U.S. quail hunter numbers based on the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of Interior and U.S. Department of Commerce, 1991, 1996, 2001, 2006, and 2011).



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