



The Dirty Dozen Threats to Hunting: 21st Century Implications for Recruitment, Retention, and Reactivation

The latest report from Responsive Management on the 12 leading threats to hunting in the 21st century is a “must read” for every American hunter. But despite the battles we face, wildlife and our great hunting heritage will prevail providing our conservation and management practices are based on a scientific, deliberate and orderly process.

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INTRODUCTION

Hunting is one of the oldest human activities. Even as industrialized farming and grocery stores have replaced the need to head into the woods for our meals, hunting persists in our culture. In America, hunting remains a venerable pastime, with millions of hunters taking to the field each year to obtain their own meat and to maintain an intimate connection with wildlife.

Less intuitive is the fact that hunting itself plays a central role in the conservation and management of North America’s wildlife. Funding generated through hunting is instrumental to the conservation of lands, habitat and a multitude of species. As Theodore Roosevelt said, “In a civilized and cultivated country, wild animals only continue to exist at all when preserved by sportsmen.” While the base of those who help

to ensure the existence of wild animals has expanded, hunters continue to play a critically important role.

In 2013, the most recent year for which complete data are available, hunters spent about \$821 million on licenses and permits and almost \$813 million in excise taxes, contributing more than \$1.6 billion directly to wildlife management. These excise taxes are collected by the [U.S. Fish and Wildlife Service](#) through the [Federal Aid in Wildlife Restoration Act](#) (also known as the Pittman-Robertson Act) and appropriated to state fish and wildlife agencies based on a formula accounting for each state’s land area and the number of paid hunting license holders. The [Wildlife Restoration Act](#) and the accompanying [Sport Fish Restoration Act](#) dictate that the funds be spent *only* on fish and wildlife programs, rather than general



needs such as transportation or public health.

As cited in "[Hunters' Contributions to Wildlife Conservation](#)," hunters are behind many of the most remarkable wildlife conservation success stories. Through the funds made possible by the Pittman-Robertson Act, the whitetail deer population went from less than 500,000 in 1900 to more than 30 million today. Wild turkey went from under 650,000 in 1900 to more than 7 million today. The wood duck, extremely rare in 1900, has increased to 5.5 million today. The Rocky Mountain elk has gone from 40,000 individuals in 1900 to about a million today. There were just 13,000 pronghorn antelope in 1900 compared to about a million today. And while just 25,000 bighorn sheep roamed North America in 1950, that number has climbed to 80,000 today. The resurgence of these populations would not have been possible without hunters and their economic contributions to wildlife conservation.

Hunters' funds also have helped to bring back countless non-game species such as the bald eagle, the trumpeter swan and the brown pelican, to name only a few. This is in addition to the millions of acres of wildlife habitat that have been conserved throughout North America—an accomplishment made possible, again, with funding from sportsmen.

Finally, the annual overall economic impact from hunting and sport shooting (a closely related activity that overlaps with hunting) totals more than \$110 billion. This figure considers retail sales, salaries and wages, and local, state and federal taxes associated with hunting expenditures. Hunting is also responsible for more than 800,000 jobs, many of which are created in rural areas where they are needed most.

For all these reasons, it is vital that Americans continue to have the opportunity to hunt. Unfortunately, the number of hunting licenses sold nationally and the percentage of the U.S. population participating in hunting both show a flat to downward trend. Influencing these trends are specific threats jeopardizing continued hunting participation and, conse-

quently, the funding for wildlife conservation and management that it provides. These threats center around 12 major themes—a "dirty dozen" of issues affecting hunting participation in America. This threats encompasses both broad societal shifts and trends that fish and wildlife agencies, NGOs (non-government organizations) and sportsmen's groups are powerless to change, and specific issues relating to resources, planning and outreach that agencies can influence.

While many agencies and groups are actively doing just that, the danger is that current strategies may be based on the most obvious or convenient approaches. This brings to mind the parable of the man searching for his keys at night under a streetlamp: A passerby offered to help and asked the man where he last saw his keys. "Over there," the man said, pointing to an area far outside of the pool of light. Incredulous, the good Samaritan asked, "Then why aren't you looking there?" "Because the light's better here," he replied.

In the same way, many efforts to maintain current hunters and create new hunters are being initiated through the easiest opportunities—but they may not be the best strategies. Agencies, NGOs and sportsmen's groups must look "beyond the light." Or, more specifically, they must expand the light to better see what they are facing.

If threats to hunting are to be eliminated, they first must be understood. Below are the dirty dozen threats to hunting participation, beginning with the demographic trends reflecting changes to U.S. society overall.

THE 12 THREATS TO HUNTING

1. THE CHANGING DEMOGRAPHIC MAKEUP OF THE UNITED STATES

Five key demographic trends run counter to what is optimal for hunting: an increase in the total U.S. population and increases in urban residents, older residents, minority resi-

dents and immigrant residents.

The first trend is a problem mainly from the secondary results of the increase in population—the urbanization that accompanies an increasing population overall. The increasing population will require more housing, which will often lead to a loss in habitat acreage. As suburbs encroach into rural areas, hunting areas are lost. The travel distance to hunt also increases as hunting areas closer to urban areas become inaccessible.

The other four trends all pertain to increases in populations that collectively make up the demographic *opposite* of the typical American hunter. Data shows that rural people hunt at a higher rate than do urban people; younger and middle-aged groups hunt at higher rates than older age groups; and increases in the minority and immigrant proportions of the population, including the increase in those of Hispanic origin, mean an increase in two other population groups with lower rates of hunting than the group that considers itself white or Caucasian. In short, the proportion of the U.S. population that is most likely to hunt is getting smaller.

In particular, the rise in urban residents means that a smaller portion of the population is growing up in an environment conducive to hunting. This leads to a loss of the hunting culture. Urban residents do not have as strong a relationship to wildlife or to hunting as do rural residents. Hunting families produce hunters and hunters, in turn, produce hunting families, but the decrease in rural populations makes this increasingly difficult.

The implications of these demographic shifts are already being explored by some fish and wildlife agencies. For example, Loren Chase of the [Arizona Game and Fish Department](#) analyzed the age structure of avid licensed hunters four times— 1992, 2001, 2006 and 2012—using license databases from Arizona and 18 other states. When the graphs of the four snapshots are superimposed, the progression of the avid hunting age group is shown to be rapidly approaching the point at which its members will “age out” of the sport. This large group of hunters will disappear, and new hunters are not entering the sport at a rate sufficient to make up the difference.

2. NON-HUNTING SHOOTERS AND ARCHERS CONTRIBUTING TO PITTMAN-ROBERTSON

It is widely acknowledged that fish and wildlife agencies need more funding and that funding comes primarily from hunters and anglers who purchase licenses and contribute additional money through excise taxes.

The [Pittman-Robertson Act](#) was set up to benefit wildlife and, by extension, the sport of hunting. Its funding source is an excise tax on firearms and ammunition. However, a large portion of the sport-shooting public does not hunt, and evidence suggests this non-hunting proportion of the shooting/hunting community is growing. In other words, more and more funding for Pittman-Robertson will be coming from non-hunting sport shooters. A similar situation can be seen in the archery component of Pittman-Robertson funding, which concerns



an excise tax on archery equipment: evidence suggests that the non-hunting portion of archery participants is growing (i.e., a growing proportion of all archers are target archers but not bowhunters.)

Two ongoing participation studies conducted by [Responsive Management](#) between 2009 and 2015, one on sport shooting for the [National Shooting Sports Foundation](#) and the other on archery for the [Archery Trade Association](#), make it clear that the total populations of sport shooters and archers (groups which, historically, have included large proportions of hunters) are increasingly made up of non-hunting participants. Thanks to a recent spate of high-profile movies and television shows that have prominently showcased archery (*Game of Thrones*,

The Hunger Games series, *The Walking Dead*, *Arrow*, *Brave*, etc.), that activity in particular has attracted interest from many nonhunters who are coming to the sport not through hunting but through the target shooting side of it.

While it would seem to be a positive development that non-hunting shooters are increasingly helping to fund state agencies, this may result in pressure to lessen the agencies' focus on hunting and wildlife management in favor of resources that relate strictly to sport shooting and archery.

It remains to be seen whether the influx of non-hunting participants will continue to change the proportions of the sport shooting and archery communities. Regardless, the growing pools of non-hunting shooting and archery participants, who nonetheless pay excise taxes on shooting and archery equipment and ammunition, may want to see more Pittman-Robertson funding going to non-hunting and non-wildlife uses, such as public target ranges in areas closer to urban centers where many of the new shooters and archers reside.

3. LOW PUBLIC KNOWLEDGE ABOUT WILDLIFE AND CONSERVATION

According to the [Wildlife Management Institute](#), in the 2012 elections, 46 of 57 statewide, municipal and county ballot initiatives across the country concerning funding and support for conservation-related causes passed—an 81-percent passage rate. Additionally, based on data from the [Trust for Public Land](#) and the [National Conference of State Legislatures](#), in the 2014 elections, 41 of 57 statewide, municipal and county ballot initiatives, referenda and bond measures concerning wildlife, land preservation, sportsmen's rights and other conservation-related issues passed—a 72-percent passage rate. The results demonstrate that people care about wildlife and natural resource conservation issues and are willing to put their money where their mouths are.

However, despite these positive feelings, there is much ignorance about wildlife in general, how wildlife is managed, the role of hunting in that management, how wildlife management is funded and the very basic knowledge of the state agency that is actually tasked with managing wildlife.

For instance, in a survey conducted by [Responsive Management](#) in the 16 member states of the [Southeastern Asso-](#)

[ciation of Fish and Wildlife Agencies](#), less than half of state residents (only 38 percent) could name their state agency or a close derivative of the agency name. Additionally, when asked how their state fish and wildlife agency is funded, most residents do not really know. Common answers are “taxes” or “state taxes,” but the reality is that little if any general state taxes go to these agencies. Furthermore, knowledge of the excise taxes on hunting and fishing equipment (including firearms and ammunition) is very low. Amazingly, this is true even of those who consider themselves to be hunters or anglers.

Another [Responsive Management](#) study found that only 18 percent of Delaware residents knew about the [Pittman-Robertson Act](#), the source of the excise tax on firearms, ammunition and hunting equipment.

The danger of this relatively low level of knowledge and awareness is that the public does not generally understand the biological principles upon which wildlife management is based. They also may not support or understand the methods—including hunting—that are used to manage wildlife, which leads into the next threat.

4. ANTI-HUNTING SENTIMENT

The anti-hunting movement is, fortunately, a fringe movement. The large majority of Americans approve of hunting, even if they do not personally hunt. Roughly three-quarters of U.S. residents approve of legal hunting, a rate that has held steady since 1995, according to ongoing trend surveys conducted by [Responsive Management](#).

An important nuance of this general approval of hunting is that it is not constant for all species, for all reasons to hunt or across all hunting methods. This is evident in the results of a [Responsive Management](#) survey that found while a large majority of Americans approve of hunting deer, wild turkey, small game and waterfowl, only 60 percent approve of hunting elk, and less than a majority approve of hunting black bear, mountain lion or mourning dove.

Likewise, a large majority of Americans approve of hunting for the meat, to protect humans from harm, for animal population control and for wildlife management. Each reason has more than 80 percent of Americans expressing approval. But only 71 percent of Americans approve of hunting to protect property, just more than half approve of it for the sport, and less than a majority approve of it to supplement income, for the challenge or for a trophy.

In looking at various hunting methods and equipment, a [Responsive Management](#) survey found that more than half of Americans are opposed to hunting using high-tech gear such as remote trail-cameras, hearing devices or laser tripwires. Also, just more than half oppose hunting in a high-fenced preserve. Hunting over bait and hunting using scents that attract game also have relatively high levels of opposition, some of which comes from hunters themselves over concern about fair chase principles.

The danger to hunting is that robust opposition to some types of hunting can be exploited to lower support for it as a whole. For instance, the [Humane Society of the United States](#) supported a ballot referendum in Maine that sought to ban three methods of bear hunting that do not have high approval: baiting, hunting with dogs and trapping. While the referendum did not pass, certainly some of those who supported it

were doing so to chip away at the right of Maine residents to go hunting at all.

5. POOR HUNTER BEHAVIOR

Pairing with some non-hunters’ uneasiness over certain methods of hunting is their uneasiness about some hunters’ behaviors. Some non-hunters even say they approve of hunting in general but have a problem with hunters themselves. This perception is not wholly without reason—as with any group, some hunters are bad apples who tarnish the reputation of the entire sport. For instance, regarding hunters who witnessed or were aware of a hunting violation, 81 percent of non-hunters indicated they believed the hunter knew of the violation but intentionally committed it anyway.

Public perceptions of poor hunter behavior can be more damaging than the reality. A recent example is the case of Cecil the Lion. An American hunter paid guides for the opportunity to hunt the lion in what he allegedly thought was a legal hunt. When it later was shown that **the guide’s actions were illegal and they were charged with poaching**, the reaction in the United States was severe, though the American hunter was not charged with any crimes. Nevertheless, the hunter went into hiding as protesters decried his actions.

While African lion management strategies and the wisdom of this particular hunt can be debated, the perception the incident gave hunting is beyond debate: This was a huge black eye for recreational hunting. The incident led directly to concrete steps taken by some agencies and companies against this type of trophy hunting, including new rules issued by the U.S. Fish and Wildlife Service on the importation of trophies from other countries, and a ban by some airlines on carrying certain trophies as cargo.

Hunters must be aware of how their actions will be perceived, as any perceived as harmful or unethical can damage support for hunting. An instructive example occurred in a [recent live debate sponsored by Intelligence Squared](#) and [covered by NRAHLF.org](#) in which two pro-hunters and two anti-hunters debated the question of whether hunting is conservation. The anti-hunters won the debate, according to the measurements of audience reaction, by moving the discussion into the hunting of Cecil the Lion and other African species and questioning whether the funds generated from these hunts go toward wildlife conservation. In other words, they moved the debate into the types of animals that most Americans do not want to see hunted and into the motivations for hunting (for the adventure, for a trophy) that also are not widely supported.

6. LACK OF ACCESS

Access is an increasing problem, in part, because of one of the previously discussed demographic trends: the increase in the total U.S. population and the resulting urban sprawl. Urbanization causes the loss of huntable areas and the fragmentation of habitat. However, evidence suggests access is also becoming more difficult because landowners who are not affected by urbanization are increasingly disallowing hunting.

Fully understanding access issues requires access itself to be broken down into components. Access comprises physical access and social/psychological access. Physical access refers to the actual land available for hunting, the physical

ingress/egress to those lands and the “accommodation” of the land, as terrain dictates how far or fast the hunter can go into or take game out of an area. Social aspects involve the perceptions and assumptions of those physical aspects but also include things unrelated to the physical access, such as simple knowledge of land available for hunting.

The first two aspects of physical access are the actual land and the ability to get to and from that land. As an example of the latter, public land can become surrounded by private lands on every side. If access is not provided by design, the land can truly become “acreage open for hunting” that is actually not available for hunting. (This phenomenon is a common problem among anglers who fish in lakes and ponds, where all the shorefront property is bought up and then posted. Though, technically, the middle of the lake may still be a public area, there is no way to get to it without crossing private land.) In a [Responsive Management](#) study on access, “private land blocking access to public land” was described as a major problem by 9 percent of hunters and a minor problem by another 20 percent.

The accommodation of the land obviously affects hunters differently. Some seek the solitude that a long hike into wilderness provides, but others—particularly older hunters who increasingly make up the hunting community—can no longer make the hike. The accommodation also has an effect on perceptions, which leads into the social aspects of access.

The perception of access, to the hunter looking to go hunting, is more important than the actual access. For instance, if a hunter has problems finding a place to park his car at a certain location, he may never return, even if the place nearly always has room but simply did not on that day. In this case, perception (that there is never available parking there) does not match reality (usually there is available parking), but the perception wins out and hunter never returns. Similarly, an access point marred by illegal dumping, although providing sufficient access, may be perceived as a location to avoid. Again, this is a social/psychological aspect of access.

Another important aspect of social/psychological access is awareness of access, a factor that agencies can influence. A hunter without any nearby hunting lands is the same as a hunter who does have hunting lands nearby if the latter does not *know* about those lands.

Access programs should consider both physical and social/psychological access. The aforementioned research on access and the effectiveness of access programs overall—titled [Issues Related to Hunting Access in the United States](#)—was conducted by [Responsive Management](#). The study reviewed more than 60 access programs. Some programs found to be quite effective included walk-in access programs and mapping/atlas programs. Not surprisingly, the first of these combines both physical access (providing a place to hunt) and social/psychological access (in that it alleviates hunters’ worries about whether they will find a place to hunt). The second—atlas/mapping programs (and now phone apps)—is completely in the realm of social/psychological aspects, as it lets hunters know where the land for hunting can be found.

7. LACK OF OPPORTUNITY

Lack of opportunity must be considered as separate from

access because it refers to wildlife populations themselves. If there is no game to hunt, all other issues, including access to hunting lands, are a moot point. While other threats overlap with this issue, such as the prospect of urban sprawl destroying available habitat, an important element that has not yet been discussed is **climate change and its effect on wildlife**.

While recent evidence seems to have settled the debate over whether climate change is occurring at all, the next phase of the discussion concerns whether recent climate changes are the result of human activities. Regardless of the causes, the very real changes that have occurred are affecting wildlife. These effects may translate into effects on hunting particular species.

[Responsive Management](#) has already conducted research on hunters’ perceptions of climate change and its effects on wildlife. Most notably, a study conducted for the National Wildlife Federation found that 70 percent of hunters and anglers nationwide strongly or moderately agreed with this statement: “Global warming is a serious threat to wildlife.” Many respondents indicated they had already observed phenomena that they believed to be a result of climate change, which 73 percent believed was or would soon impact hunting and fishing conditions.

A report titled “Beyond Seasons’ End: A Path Forward for Fish and Wildlife in the Era of Climate Change,” produced by a coalition of conservation organizations including the [Wildlife Management Institute](#) and the [Theodore Roosevelt Conservation Partnership](#), noted the following: Because of climate change, “sportsmen will need to encourage and support state and federal agencies as they respond to this threat with major expansions in projects that attack the problem at the landscape level. They must insist that these agencies use adaptive management techniques and established best practices.”

The report suggests that the following efforts be made:

- Reduce present threats to wildlife populations to increase their ability to withstand the immediate consequences of climate change.
- Restore and manage habitat to address the effects of changes in temperature, weather and precipitation patterns on species’ ranges.
- Establish and conserve fish and wildlife movement corridors.
- Allocate sufficient water for fish and aquatic habitats.
- Adjust harvest management and population restoration policies.
- Prepare regional and national fish and wildlife management plans.

Another problem that could affect wildlife is the inadvertent introduction of invasive species. While they do not yet appear to have drastically changed huntable species, invasive species already have drastically changed some fisheries, to the detriment of some anglers’ fishing experiences. This threat may start to negatively affect hunting by harming huntable species directly or by affecting habitat.

Loss and fragmentation of habitat also can harm the viability of species, as touched on previously. While open public lands are critical to maintaining habitat and animal travel corridors, there is some political pressure for the federal government to cede ownership of lands to private interests. Should

those lands be put into corporate or otherwise private hands, there is no guarantee that their uses will be compatible with wildlife.

8. FITS AND STARTS

Agencies change personnel for a variety of reasons as people are promoted or change jobs. The top levels of management often change with the political cycles. The result is that programs vigorously managed under one person are forgotten under another. Priorities, directives and mindsets may change, but programs must be given the time to become effective to succeed.

Agencies and other organizations must ensure consistency in their efforts. Scattershot programs that are discarded too early or inconsistently managed will not have their desired effects, and the effort and time spent establishing such programs will be lost.

9. FOCUSING ON OUTPUTS OVER OUTCOMES

Metrics used to measure program success may sometimes miss the point of the programs themselves—namely, that hunter recruitment programs are designed to create new hunters. But there is a danger in becoming distracted by program *outputs* (the number of participants who complete a program, for example) over program *outcomes* (the number of actual new hunters initiated into the sport, or an uptick in hunting license sales as a program's result). For instance, an online Web page designed to bolster recruitment may be judged on the number of page views it generates, but there is no guarantee the page views led to increased participation. While such metrics are important to measure, program bottom lines also must be measured. Ultimately, the bottom line dictates program success or failure.

10. FAILING TO FOLLOW THE RIGHT PLAN OF ACTION

The [National Hunting & Shooting Sports Action Plan](#) recently developed by the [Council to Advance Hunting and the Shooting Sports](#) concisely lays out research-based recruitment and retention strategies. The plan has two facets: It seeks to increase participation in hunting and the shooting sports, and it seeks to increase support for these activities.

The plan identifies key primary threats to hunting and sport shooting, such as a lack of awareness, a lack of motivation, a lack of skills and a lack of access. Under each of these are secondary threats that can result from the primary threat. For instance, lack of awareness causes the secondary threat of lack of social acceptance. The lack of motivation manifests itself in a lack of cultural relevance. The plan then suggests efforts to address those threats.

Important elements of the plan include better coordination of current multi-faceted efforts, identifying and prioritizing resources for these efforts and facilitating the creation of strategic partnerships to further them. It is important that the work put into plan development is not wasted. The obligation now is for agencies and organizations to avoid duplicating efforts and to make use of this critical roadmap.

11. NEW MAJOR FUNDING SOURCES

In some ways, hunters are between a rock and a hard place when it comes to funding. While new funding sources could ease the burden placed on hunters (and anglers, as

well), those new funding sources could change how agencies focus their efforts. For instance, a report by the [Blue Ribbon Panel on Sustaining America's Diverse Fish and Wildlife Resources](#) cites the Pittman-Robertson Act and notes, "This remarkably successful funding mechanism can be replicated to address the urgent conservation needs of all fish and wildlife and expand the number of citizens who invest in nature." This expansion of citizens helping to fund conservation may bring along with it priorities that differ from the traditional priorities of these agencies. The question is, if new major funding sources are obtained, will agencies lose their interest in recruitment and retention of their traditional constituents?

To be clear, the future of fish and wildlife conservation in the United States depends on broadening fish and wildlife agency funding and constituencies. Agencies need to broaden their focus to comprehensive fish and wildlife management. This includes welcoming the broad spectrum of the American public that cares about wildlife conservation, including wildlife viewers, birders, and people who simply support the existence values of game and nongame species. The point here is that when this transformation takes place, concern for America's hunting and fishing heritage must continue, even though agencies' financial challenges have been addressed.

12. BAD RESEARCH AND PROGRAMS BASED ON SUB-STANDARD OR NO DATA

The final threat is wholly in the control of those who manage recruitment and retention efforts: the development of programs based on bad data—or no data at all. An example of this occurred several years ago when single-parent households were blamed for hunting declines.

The conventional wisdom was that most single-parent households were headed by women, and the absence of a man meant that the child had no hunting mentor. However, the data that supported this assertion were called into question, and additional data about the actual rate of hunting among this demographic group were produced. To begin, the data used to identify children living in a single-parent household did not account for many variations of living arrangements. The result was that some children who were *not* living in a single-parent household were classified as such. Another leap presumed that children from single-parent households do not have sufficient male role models, but data contradicted this, too. For instance, "weekend" fathers in those situations were more vigorous in mentoring their children than was supposed. Perhaps they were making up for not being around otherwise; regardless of their motivations, data suggested that they often took their children hunting. As a result, programs that were created to address this problem were not attacking a real problem.

Another example concerns a recent survey that suggested a high percentage of a certain subset of license buyers were purchasing their licenses online. Subsequent examination of the survey, however, determined that it had been conducted *only of those in the license database that had an email address*. It was not the poll itself that was problematic—it correctly asked the questions necessary to obtain the data—but the *sampling* used in the survey. Had the sample included those in the database *without* an email address, the

percentage reporting that they made their license purchase online would have dramatically decreased.

A word of caution: It is important that human-dimensions research on which hunting and wildlife management strategies are partly based be conducted in a scientifically valid way. Surveys must ask questions in an unbiased manner. For instance, a question asking about support of a particular regulation needs to offer the respondent both choices: whether to support or oppose. But the formulation of survey questions is the easier part of the equation. The harder part is ensuring a scientifically valid sample.

The famous photograph of President Harry S. Truman after his win in the 1948 election holding up a newspaper with the headline “DEWEY DEFEATS TRUMAN” provides a useful example of plans being based on bad data. An early press deadline required the lead article and headline to be written before the voting concluded. At the time the paper (the Chicago Daily Tribune) went to press, Dewey was leading in the reporting precincts. This combined with the fact that many polls leading up to the election showed Dewey to be the presumptive winner caused the managing editor to go with the “Dewey Defeats Truman” story. It was, of course, notoriously wrong.

So what went wrong with the polling prior to the election? The major polling firms that predicted a Dewey win were using what was thought to be the most scientific sampling methodology: quota sampling. In short, quota sampling sought to systematically match a sample to a national profile by using quotas. It forced the sample to have a certain number of women, black voters, young voters and so on. The underlying problem with quota sampling comes in when deciding which factors to consider and how they should be apportioned. The sampling itself can throw the results, if the underlying assumption about how many of the respondents should be of a certain demographic type is not accurate. (Additionally, in the case of Gallup’s 1948 polling, the people within each quota category were not chosen randomly from within that category but instead were chosen by the interviewer, which further biased the surveys.)

Today, some surveys use panel samples, but a cautionary note again emerges. Proxy measures of sport shooting participation and firearm use show that [Pittman-Robertson](#) excise tax gross receipts—the tax on firearms, ammunition and hunting equipment—went from \$3.5 million in 2008 to \$8.1 million in 2013, and [National Instant Criminal Background Checks](#)—required for all in-store firearms purchases—rose from 12.7 million in 2006 to 21.1 million in 2013. Additionally, the total economic impact of the firearm and ammunition industry (based only on sporting firearms and ammunition, not military) was estimated to have risen from \$19.1 billion in 2008 to \$37.7 billion in 2013. Despite these consistent indicators, the [National Sporting Goods Association](#) (NSGA) online panel surveys indicated that sport shooting participation fell from 20.3 million participants in 2008 to 19.0 million participants in 2013. These results do not appear to reflect the reality suggested by the other data.

Other [NSGA](#) data collected using the online panel sampling methodology are similarly perplexing. The [National Survey of Fishing, Hunting, and Wildlife-Associated Recreation](#) (a major telephone survey trend study conducted by the [U.S. Fish and Wildlife Service](#) and the [U.S. Census Bureau](#)) indi-

cated that the number of hunting participants in the United States rose from 12.5 million in 2006 to 13.7 million in 2011 (a 9.6 percent increase), while NSGA polling showed the number of participants declining from 19.9 million to 16.4 million during the same time period (a 17.6 percent decrease). Likewise, between 2006 and 2011, the *National Survey* showed a 10.3 percent increase in the number of anglers, while the NSGA showed a 20.2 percent decrease. License data showed an increase of 6.1 percent in bowhunting licenses purchased over the same period that NSGA polling showed a 13.6 percent decrease in the number of bowhunters. In each instance, the online panel data conflicts with the telephone survey and license sales data, pointing out the importance of making sure the survey methods used to plan recruitment and retention programs are correct.

The final verification of telephone polling using scientific sampling comes from the 2012 U.S. Presidential election. In these examples, the polling firms determined to be the most accurate (as verified from the actual voting results) were not using panel sampling. A post-election analysis conducted by *The New York Times* considered two categories of firms: those that did multiple polls in the days leading up to the election, and firms that did only a single poll or just a few. Among firms that conducted multiple polls, two of the three most accurate firms used telephones (with live interviewers—not “robocalls”), including cell phones, from a scientifically valid sample—not a panel sample. Among firms in the second category, 16 of 18 of the most accurate firms used live telephone polling. In short, reputable telephone polling, in a situation with direct verification by the actual vote, was highly accurate. Hunter recruitment and retention programs must be based on accurate, scientifically valid data.

CONCLUSION

The decline in hunting participation in America can be stabilized and reversed *if agencies are able to understand the most immediate threats to hunting*. While these threats involve a combination of demographic factors, social reasons and resource constraints, each can be overcome by recognizing the reasons behind them and the solutions most likely to solve them. Threats facing hunter recruitment, retention and reactivation today recall the dilemma that faced America’s wildlife populations more than a century ago. While the crisis then seemed a foregone conclusion, the situation changed when wildlife biologists, sportsmen and others applied sound science to reverse the declines in wildlife populations that had sustained tremendous losses. In the same way, America’s hunting tradition will survive well into the future through a combination of perseverance and an approach based on a scientific, deliberate and orderly process.