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**Introduction by  
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*It is refreshing to see how future leaders in the wildlife profession are thinking about their future roles and the challenges they see ahead. This article highlights several trends that warrant attention. Who will pay for wildlife conservation and what will they expect in return as revenues from hunters decline? What will it take to “rescue” conservation from its drift away from its origins in shared, sustainable, and ethical use of natural resources? Is it possible to command technical expertise in big game, waterfowl, or upland game if future professionals are expected to work even more on the human dimensions of management? Jonathan, Erin, Jerod, and Alison have these and other thoughts in mind as they prepare for their careers. Give their thoughts some consideration and tell us what you think.*

# A Wildlife Graduate Student Perspective

**on the Future of Big Game Management in North America**

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**By  
Jonathan Derbridge,  
Erin Cleere,  
Jerod A. Merkle, and  
Alison Mynsberge**

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A century ago North American big-game populations were teetering on the brink of annihilation, but thanks to the commitment of wildlife enthusiasts and the development of a new profession, ungulate and carnivore species have rebounded and will likely persist into the future. Future wildlife professionals will have the privilege of working with this living legacy but will encounter a series of fresh challenges. As graduate students in the wildlife biology program at the University of Montana, we look forward to devoting our careers to surmounting these challenges and protecting the legacy of the original wildlifers. Herein, we outline what we expect to be faced with and how we perceive our professional futures.

A major concern in big-game management is the effect of changing human demographics on wildlife. Increasing numbers of private landowners are subdividing and restricting access to wildlife habitat, resulting in a reduced ability for state wildlife agencies to manage big game. Government agencies and land trusts have been successful in protecting habitat and maintaining access through land purchases and conservation easements, but the threat of subdivisions and growing numbers of individuals with whom managers must cooperate may represent the greatest challenge to current big-game management. Broad-scale conservation initiatives that involve whole communities working in partnerships with government agencies and land trusts to protect habitat and maintain access (e.g., the Blackfoot Challenge and Yaak Valley Forest Council in Montana, and the Sonoran Desert Conservation Plan in Arizona) are becoming increasingly important.

As human demographics change, the human population increases and competes with big-game habitat, hunting participation declines, and a significant reworking of big-game management funding will be required. Already, traditionally named big-game management agencies (e.g., “Department of Fish & Game”) are being rebranded (e.g., as “Department of Natural Resources”) to reflect the demographics of the client base. Hunting dollars will not be sufficient to sustain big-game management, and revenue will probably be drawn from the wider public. The hunting community may initially resist such change out of concern that incremental loss of control through funding may result in restrictions to hunting

opportunities. Ultimately though, as managers respond to a wider range of perspectives and adopt a broad focus that incorporates non-game along with big-game management, state agencies will be better equipped to educate the public about the importance of hunting as a management tool.

The goal of educating the public and gaining general support for the actions of wildlife agencies will become more realistic as management personnel changes to better reflect the general population. Agencies and academic institutions have greater gender, racial, and cultural diversity than in decades past, but the transition has been slow. As women, minorities, and people from different backgrounds gain a stronger voice within our field, the public perception of big-game management will improve. This will allow agencies to better communicate their duties and responsibilities, gain public support, and develop new sources of funding.

Climate change will define much of big-game management's future. Increasing temperatures are causing changes in species' ranges, migration patterns, and summer nutrient availability. Direct effects of climate change include decreased survival for northern big-game species intolerant of heat (e.g., moose). Currently, there are few cohesive strategies for big-game management in a warming climate, but realistic policies can only be developed as data becomes available. Long-term monitoring to determine how climate change will affect big game will be important in identifying key areas of habitat to protect and defining the appropriate balance of natural resource use.

As the wildlife profession continues to develop along with the shifting landscape and challenges it faces, it is important that the public understands the role of big-game management. Although they are closely related in practical terms, the words "management" and "conservation" are understood by many people as consumptive and non-consumptive practices, respectively. As a result, game managers may be perceived as working exclusively to provide opportunities for anglers and hunters. In fact, wildlife professionals have much broader responsibilities, and are proficient in a spectrum of technical skills needed to fulfill them. Part of our work as biologists is to ensure that the public understands how management and conservation goals work in concert to benefit wildlife, and ultimately ecosystem health.

Today's big-game managers must understand ecology and have a firm grasp of

field and statistical analysis skills, but they must also have the ability and desire to work with people. The frequently repeated phrase "we manage people, not wildlife" may sometimes betray an element of disillusionment from managers who feel the growing responsibility to work directly with the public detracts time from their primary professional interest of working with wildlife. Aspiring wildlife professionals need to be aware that an ability to work closely with the public will be a critical component of their skill sets and should expect this responsibility to grow along with the increasing human population. Agencies are spending increasingly large portions of their budgets on communications positions. This trend has led to an overhaul of wildlife management structure, where some biologists specialize in dealing with the human aspect

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of management and even wildlife biologists who focus on monitoring and research have to consider the human element.

With the changing expectations of wildlife managers, there is a concurrent need for academic institutions to adapt their programs to ensure students are prepared for a career in the profession. Wildlife programs vary in focus, with different amounts of emphasis being placed on the importance of natural history, statistics, and practical skills. Not all wildlife programs have maintained a strong element of big-game management because faculty research interests are more diverse than in the past, increasingly focusing on non-game and endangered species issues. For students interested in big-game management, it is important to recognize the options available and the great variation in focus of wildlife-oriented programs.

Shifts in the focus of academic research reflect changing public interests in wildlife. Agency research divisions have traditionally studied big-game issues, but as public interest in wildlife gravitates away from hunting-related matters, research on non-game and endangered species will become more common. Currently, research and long-term monitoring of big game are severely limited by the time constraints and demands placed on agency researchers to produce short-term reports within their jurisdictions and budgets. Improvements in

the quality and scope of big-game research could be made through collaborative studies between agencies of neighboring states and countries and with academic institutions. This would serve to increase the pool of funding and research talent and develop working relationships between universities and agencies. Resulting research would cover much broader spatial and temporal scales than in the past and be more ecologically meaningful.

The encroaching influence of technology in young people's lives and the substantial decline in time engaged in outdoor activities means fewer children enjoy the formative experiences that inspired many big-game managers to dedicate their lives to the profession. Despite this, young minds are usually receptive to new experiences and ready to be amazed and excited by nature when given the opportunity. Offerings such as the Boone and Crockett Conservation Education Program will be instrumental in providing students and teachers with the opportunity to learn about wildlife and our ecosystems.

A future role of big-game managers and wildlife professionals may be to develop programs that educate K-12 students about the fascinating realities of wildlife management. This will help build community understanding and support of conservation initiatives, while inspiring the next generation of biologists.

Today's graduate students can look forward to tackling management issues that contrast strongly with those of our forebears. We envision working with a greater diversity of professionals in command of a broader array of required knowledge and skills. The big-game manager of the future will have responsibility for and training in non-game management, and be proficient at tailoring communications to hunters, birders, and suburban wildlife watchers alike. Their salaries and research resources will be funded by all who participate in the enjoyment of wildlife (including hunters and non-consumptive users), and the increased public investment in wildlife agencies will result in an improved understanding and enhanced image of big-game management. Large societal changes have occurred during the first century of big-game management and it is critical that the profession reflects these dynamics if it is to prove capable of rising to the challenges we have articulated. Because high professional and academic standards are maintained and the workforce is motivated by a passion for the resource, we expect to be successful in protecting this living legacy. ■