
Hunter Recruitment and Retention: A Framework for Research and Action



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Prepared by:

Lincoln R. Larson, Daniel J. Decker, Richard C. Stedman, William F. Siemer,
Meghan S. Baumer, and Jody W. Enck

Human Dimensions Research Unit
Department of Natural Resources
Cornell University

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EXECUTIVE SUMMARY

Decades of decline in the total number of licensed hunters in New York and other states across the U.S. has resulted in hunter recruitment and retention (HRR) becoming a high priority issue of interest among the North American wildlife conservation and management community. Federal and state agencies and many non-governmental organizations have devoted research funding and time toward efforts to influence HRR, and this investment has resulted in a growing body of knowledge regarding the factors that affect the HRR process. For example, the longstanding partnership between the New York State Department of Environmental Conservation (DEC) and the Cornell University Human Dimensions Research Unit (HDRU) has produced several decades of HRR research in New York. However, contemporary socio-demographic changes (e.g., urbanization, parcelization of rural properties, changing racial/ethnic composition of communities) occurring in New York State and throughout the U.S. have catalyzed a movement to reconsider and potentially adapt HRR goals and strategies within this changing social context.

In a recent effort to identify and prioritize current research needs, DEC and HDRU coordinated a series of workshops in 2009 and 2010 to revisit the topic of HRR. The general outcomes of these workshops were recognition that broader social influences may be altering general perceptions of hunting and hunting participation, development of actionable research themes to inform HRR efforts, and construction of a concept map to illustrate a state wildlife agency's role in the broader social world of hunting. To understand how to adapt to changing social environments, it became evident that state wildlife agencies would benefit from a broader understanding of the dynamic factors that influence HRR. This report is intended to highlight these factors, identify knowledge gaps, and prioritize research that could help to inform future HRR efforts that may ultimately alter observed long-term declines in hunting participation across the United States.

This report considers HRR to be a process embedded in a social system where recruitment and retention cannot be attained by simply focusing on individual participant outcomes. HRR is, fundamentally, a *social process* experienced by an individual. Processes are social actions that occur within a given context (i.e., *how* the system works to affect the individual). In terms of HRR, steps in the process include entry/socialization (that foster values

conducive to hunting as well as awareness and interest in hunting) and development/continuation (that encourage and sustain the initial trial and continued participation in hunting and hunting-associated activities). This social process adapts or changes in response to (or varies according to) *social structures*, or factors in the social environment (e.g., family, peers, institutions and organizations, societal values) that affect individual behavior. Structures provide opportunities or settings in which system participants interact (i.e., *what* is involved in the system) and operate at multiple scales ranging from the individual participant to the micro (e.g., immediate family), meso (e.g., community and local landscape) and macro (e.g., broader society) structures that comprise a “social habitat” for hunting. Managers would benefit from enhanced understanding of both the social process and the social structures that affect this hunting social world.

The social world approach to HRR highlights factors that interact to influence hunting at multiple scales, including an identification of the current state of knowledge and the remaining information gaps associated with each level of social structure. At the individual level, key factors affecting HRR include cognitions (e.g., values, attitudes, and norms), motivations, and satisfactions that influence the development of hunters’ self-identity. At the micro level, family influences and hunting mentors play a crucial role. At the meso level, community support networks (often involving non-hunters) and access to hunting land and opportunities are critical. At the macro level, shifting demographics and urbanization, media portrayals of hunting, changing perceptions of hunting and conservation benefits related to hunting (e.g., perceptions of hunting as environmentally-responsible civic act), and wildlife agency and institutional support are all elements that impact the success of HRR initiatives. After considering each of these elements, the report identifies potential HRR goals and research needs to inform decision-making across structural levels.

Overall, the literature synthesis and analysis suggests that HRR concepts and programs should expand to encompass a broader hunting social world. A social world approach acknowledges the complex process of HRR that operates within dynamic, hierarchical social structures. Participation in and support for hunting could therefore be increased through a multi-pronged approach that focuses on building the active pool of hunters (the conventional HRR approach) and building and enhancing the social habitat for hunting. The HRR concept map developed by DEC and HDRU demonstrates that a wildlife agency is likely unable to single-handedly address these challenges simultaneously. A coordinated effort involving multiple

partners is likely needed to improve the social habitat for hunting while facilitating social processes needed to sustain hunter involvement. Finally, to illustrate how HRR interventions might function differently in different contexts, the report outlines a typology of distinct segments or subgroups of the hunting population that includes hunters that come to hunting through both traditional and emerging pathways. These categories illuminate primary tendencies that link certain hunting subgroups with specific recruitment routes and retention influences identified in the literature. They may provide a useful framework to guide HRR research and action.

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We acknowledge D.J. Case & Associates for developing a summary of the peer-reviewed literature on hunter recruitment and retention following a set of guiding questions supplied by HDRU. Jody Enck contributed to the HRR literature review and synthesis, which helped to inform the HRR framework and research needs outlined in the report.

Finally, we acknowledge the contributions of DEC reviewers, especially Mike Schiavone, who endeavored to make this report relevant for wildlife agencies interested in understanding the forces at work in HRR today. Funding for this study was provided by Federal Aid in Wildlife Restoration Grant W-125-S.

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PREFACE

A national crisis of sorts has been in the making over the last two decades with respect to Americans' connection with the outdoors. Encouraged by several administrations since Ronald Reagan was president, and most recently including the Obama administration, state and federal natural resource and land management agencies of various kinds, in collaboration with many non-governmental organizations (NGOs) are making a concerted effort to understand how to reconnect Americans with the outdoors and the natural resources contained therein. In his remarks at the April 2010 White House Conference that launched the "America's Great Outdoors Initiative," President Obama cautioned that "[w]e are losing our connection to the parks, wild places, and open spaces we grew up with and cherish. Children, especially, are spending less time outside running and playing, fishing and hunting, and connecting to the outdoors"

In the 2010 report, *America's Great Outdoors: A Promise to Future Generations* (submitted to President Obama by Ken Salazar, Secretary of the Interior, Thomas J. Vilsack, Secretary of Agriculture Lisa P. Jackson, Administrator of the Environmental Protection Agency, and Nancy H. Sutley, Chair of the Council on Environmental Quality), as in the president's remarks quoted above, hunting was identified as one of the activities of value historically and in the future for Americans connecting with the outdoors:

"An appreciation and an understanding of America's great outdoors cannot be gained without an understanding of the nation's natural and cultural history. Education about America's great outdoors should include both formal education and informal opportunities outside the education system—outdoor learning, nature walks, orienteering, recreation, hunting, fishing, and many other activities." (p. 24)

The *AGO* report calls for lowering barriers to participation in outdoor activities such as hunting and to encouraging participation through multiple means, including education and training in outdoor activities as well as governmental, NGO, and community support for participation.

Governmental responsibility for facilitating hunting in the United States lies largely with state wildlife agencies, aided by NGOs (including but not limited to sportspersons' groups) and

the federal government (coordinating migratory bird hunting regulations and federal land access). As trends in hunting participation have gradually declined, interest in understanding the processes driving this trend has risen. Developing a deeper and current understanding of the forces at work requires social science research. This report attempts to review and organize conceptually the state of knowledge about hunting participation and factors that influence it, providing a foundation for identification of additional information needs and research direction.

1. INTRODUCTION & CONTEXT

1.1. The National Situation

Decades of decline in the total number of licensed hunters in the United States has resulted in major biological, economic, and social consequences (Figure 1). Wildlife agencies have endured reduced conservation funding, have experienced difficulty managing impacts of some species (e.g., some ungulates) and generally fear erosion of the North American Model of Conservation, which emphasizes a sustainable connection between people and public trust resources such as wildlife (Decker, Organ, & Jacobson, 2009). Diminished numbers of hunters have affected local areas through loss of hunting-related revenue and dissolution of the hunting culture present in many rural communities. Reduced ability to exert control of ungulate populations has also caused increased ecological damage and a rise of contentious human-wildlife interactions (Beucler & Servheen, 2009; Enck, Decker, & Brown, 2000; Seng, Byrne, Sanders, & McCool, 2007; U.S. Fish & Wildlife Service, 2007, 2012; Winkler & Warnke, 2012). Furthermore, because the sociocultural importance of hunting has been shown to extend beyond actively afield participating in hunting (Stedman & Decker, 1993, 1996; Stedman, Decker, & Siemer, 1996), there is growing concern that a decline in hunting may contribute to the loss of a broader societal conservation ethic.

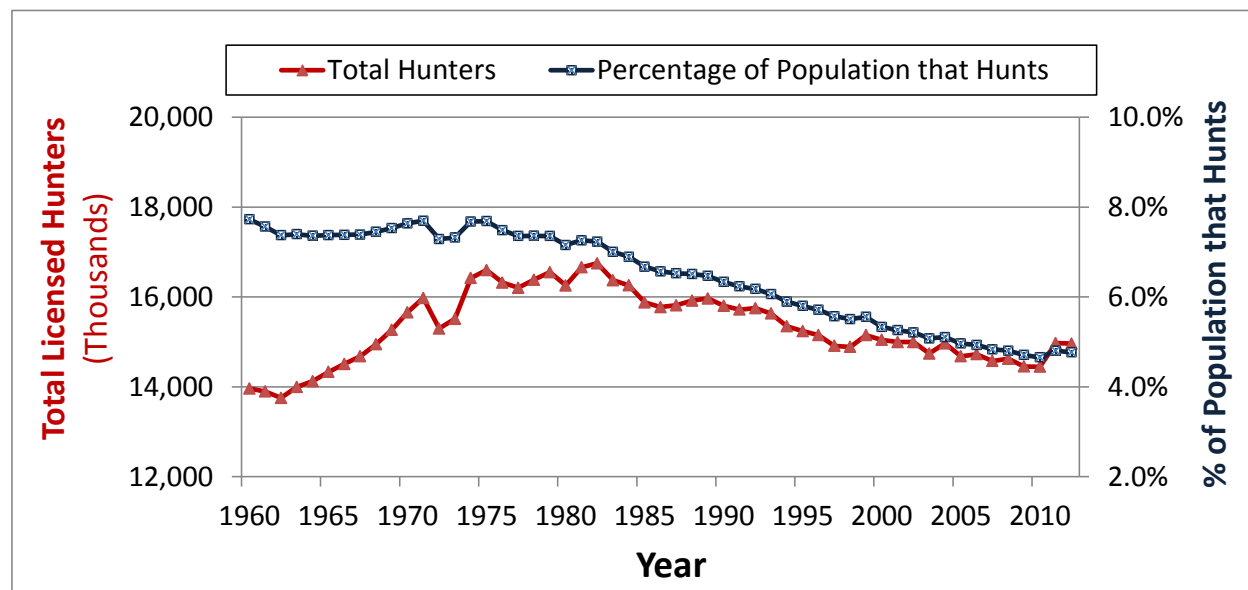


Figure 1. Hunting trends in the United States: 1960-2012 (Source: U.S. Fish & Wildlife Service, 2013)

In view of these impacts from declining hunter numbers, hunter recruitment and retention (HRR) has become a high priority issue of interest in the North American wildlife conservation and management community (Seng et al., 2007). Organizations such as the U.S. Fish & Wildlife Service (USFWS), the Association of Fish & Wildlife Agencies (AFWA), the Wildlife Management Institute (WMI), and many other non-governmental hunting and wildlife conservation groups have devoted substantial research funding and time toward efforts increase HRR. This investment has resulted in a growing body of knowledge regarding the factors that affect the HRR process. A more thorough understanding of this process begins with the definition of key terms:

- **Hunter**. In conventional use, the term *hunter* refers to someone who buys a hunting license and/or goes afield to try to harvest game animals. Such a definition inherently links “hunter” with a limited set of behaviors (e.g., license purchase, pursuit of game). Consequently, most research on hunters has focused on factors that influence individual decisions to buy a license or go hunting (Barro & Manfredo, 1996; Daigle, Hrubes, & Ajzen, 2002; Hrubes, Ajzen, & Daigle, 2001). However, a growing body of literature suggests that a “hunter” is more than that (Adams & Steen, 1997; Decker & Connelly, 1989; Enck et al., 2000; Ryan & Shaw, 2011). These studies consider non-harvest related components of hunting, including a broader range of self-perceptions and social factors that generate hunter identity and influence recruitment and retention. They also suggest that a singular focus on participation indicators may underestimate the total number of people who do, or could, consistently or sporadically provide political, social, financial, or harvest-related support for hunting (Enck et al., 2000).
- **Recruitment & retention**. *Recruitment* refers to the number of people entering the population of hunters; *retention* is the number of people remaining in the population over time (Enck et al., 2000). According to the Seng et al. (2007), recruitment and retention are concepts based partly on individual attitudes and partly on positive socio-cultural environments. Activity participation is often used by agencies as a defining characteristic of recruitment (e.g., the number of first-time participants any given year) and retention (e.g., the total number of participants from year to year), but this definition, though pragmatic in terms of budgeting and record-keeping, is somewhat limiting (Decker, Brown, & Siemer, 2001; Decker, Provencher, & Brown, 1984; Enck et al., 2000; Wentz

& Seng, 2000). Research suggests that social-psychological indicators such as those alluded to above may yield additional predictive power (Decker et al., 1984). From this social-psychological perspective, recruitment occurs when an individual develops a self-perception as an activity participant or an inclusive member of an activity culture (e.g., perception of him/herself as hunter). Retention of an individual in hunting (as a participant or member of the culture) persists as long as he/she continues to have this perception and remains committed to the activity or associated culture (Enck et al., 2000; Wentz & Seng, 2000).

Over the years, agencies and NGOs have implemented many programs to address HRR. These initiatives include but are not limited to youth hunts, family events, camp programs, advanced hunter trainings, and mentoring programs. Although considerable effort has been directed toward HRR issues, the effectiveness of all this activity has been difficult to determine (Byrne, 2009). In their 2007 Best Practices for Hunting Recruitment and Retention workbook, Seng and colleagues (2007) identified the top reasons that HRR programs fail. These reasons included inadequate budget, staff or support, an absence of clear objectives and outcomes tied to a theoretically coherent design, a lack of research to guide development and assessment, and a common assumption that the old HRR model is the best model. In many cases, HRR is defined by single-event programs or initiatives that may increase awareness and opportunities for individuals likely to be socialized into hunting anyway but are unlikely to recruit new populations of license buyers (Ryan & Shaw, 2011). Even if these new populations are initially recruited, traditional retention mechanisms may be relatively ineffective in novel hunting contexts. Numerous documented struggles emphasize an important theme that many managers now realize: conventional pathways represent just one of many routes to HRR that exist in contemporary society (Ryan & Shaw, 2011; Seng et al., 2007). In some cases, traditional models might even be counterproductive. To understand why this is true and how agencies can adapt to changing social structures, managers would benefit from a broader understanding of the dynamic factors that influence HRR. ***This report is intended to highlight these factors, identify knowledge gaps, and prioritize research needs that could help to inform future HRR efforts that may ultimately shift the observed declines in hunting participation.***

1.2. Hunter Recruitment & Retention in New York

A longstanding partnership between the New York State Department of Environmental Conservation (DEC) and the Cornell University Human Dimensions Research Unit (HDRU) has facilitated several decades of HRR research in New York, a state that has seen a 30% decline in big game hunting license purchases in the past 20 years (DEC, unpublished data). This line of research produced many of the findings and corresponding recommendations highlighted throughout this document. Examples of HDRU projects include longitudinal studies of hunting participation among graduates of sportsmen's education courses (Purdy & Decker, 1986; Purdy, Decker, & Brown, 1985, 1989), evaluations of the state's Apprentice Hunter Program (Enck, Mattfeld, & Decker, 1996), trend analyses of hunting land access and opportunities (Brown, Decker, & Kelley, 1985; Siemer & Brown, 1993), investigations of hunter identity development (Enck, 1996), and exploration of the broader hunting social world (including hunting associates who do not actively hunt; Stedman, Decker, & Siemer, 1993). These efforts yielded important insight into HRR that continue to impact policy and management today. Since the last HDRU study of HRR in the 1990s, however, many socio-demographic changes (e.g., urbanization, parcelization of rural properties, changing racial/ethnic composition of communities) have accelerated in New York State. Both DEC and HDRU staff have therefore recognized a critical need to reconsider HRR goals and strategies within this changing social context.

In a recent effort to identify and prioritize contemporary research needs, DEC and HDRU coordinated workshops with DEC and HDRU participants in 2009 and 2010 to revisit the topic of HRR. The general outcomes of these workshops were: (1) recognition that broader social influences may be altering general perceptions of the attractiveness of hunting as a recreational pursuit and motivations to hunt; (2) identification of desired future conditions and research/actions needed to bridge the gap between current conditions and those desired and necessary to achieve effective and sustainable HRR; (3) development of a list of actionable research themes to inform HRR efforts; and (4) construction of a concept map to illustrate DEC's role in the broader social world of hunting.

General research themes identified in the 2010 workshop were:

- Recruitment Themes:

1. Understand the size and nature of various populations of potential hunters (including both traditional and emerging “types”) and identify the likely pathways through which they may become recruits.
 2. Understand the factors that facilitate or impede recruitment of various populations of potential hunters into the hunting population, specific to stages of awareness, interest, development, trial, and commitment to both hunting as an activity and an overall hunting ethic, broadly defined as a set of normative beliefs and associated conventional behaviors characteristic of a hunting community. [Note: The terms describing stages in the HRR process were revised in this report to reflect the broader social influence on participation.]
 3. Understand how current active hunters, inactive committed hunters and hunting associates (individuals and formal or informal groups) enhance or impede recruitment of new hunters through actions, perceived behaviors, outreach to potential hunters, provision of opportunities, etc.
 4. Understand the role of social support at multiple levels in recruitment (and retention).
- Retention Themes:
 1. Determine the beliefs, attitudes, behaviors and social interactions of both hunting and non-hunting populations that are necessary to attract and retain hunters of different types in different stages of hunting interest and activity development.
 2. Determine the suite of conditions and the relative importance of such conditions that contribute to a critical threshold level of awareness and appreciation of hunting and its role in conservation within a community.
 3. Determine the ability and constraints of “committed” hunters to encourage retention of others in hunting.

The DEC and HDRU workshop participants acknowledged that some research findings were already available for each theme, but details about specific information available were lacking. Participants agreed that a review of existing literature would be beneficial for clarifying the state of current knowledge and determining the size and nature of existing information gaps associated with each HRR theme.

HDRU commissioned D. J. Case & Associates, a communication and marketing consulting firm with a natural resource focus and extensive experience working with wildlife agencies and NGOs across the United States on topics related to hunting participation, to conduct a literature review focused on the themes identified in the workshops. In this report, we synthesized and augmented this literature review to develop a cohesive overview of factors influencing HRR, with a particular emphasis on actionable research items and remaining information gaps. The overview is also guided by a concept map, an approach discussed by Decker, Riley, Organ, Siemer and Carpenter (2011), that was developed during the workshop to facilitate a shared understanding of how the HRR system operates. The concept map illustrates the current and potential role of DEC within the broader hunting social system (Figure 2). Arrows emanating from the upper right-hand box titled “DEC Leadership & Capacity” reflect important DEC does roles in HRR (e.g., managing for impacts, regulating and providing opportunities to hunters., actively influencing NGOs, recruitment and retention of hunters, and building of a broad societal base of support for hunting). The HRR concept map provides a generic blueprint for thinking about various targets for action in New York and other states around the country. Identification of specific actions that can be taken to address HRR challenges, however, requires a more comprehensive understanding of the hunting social system.

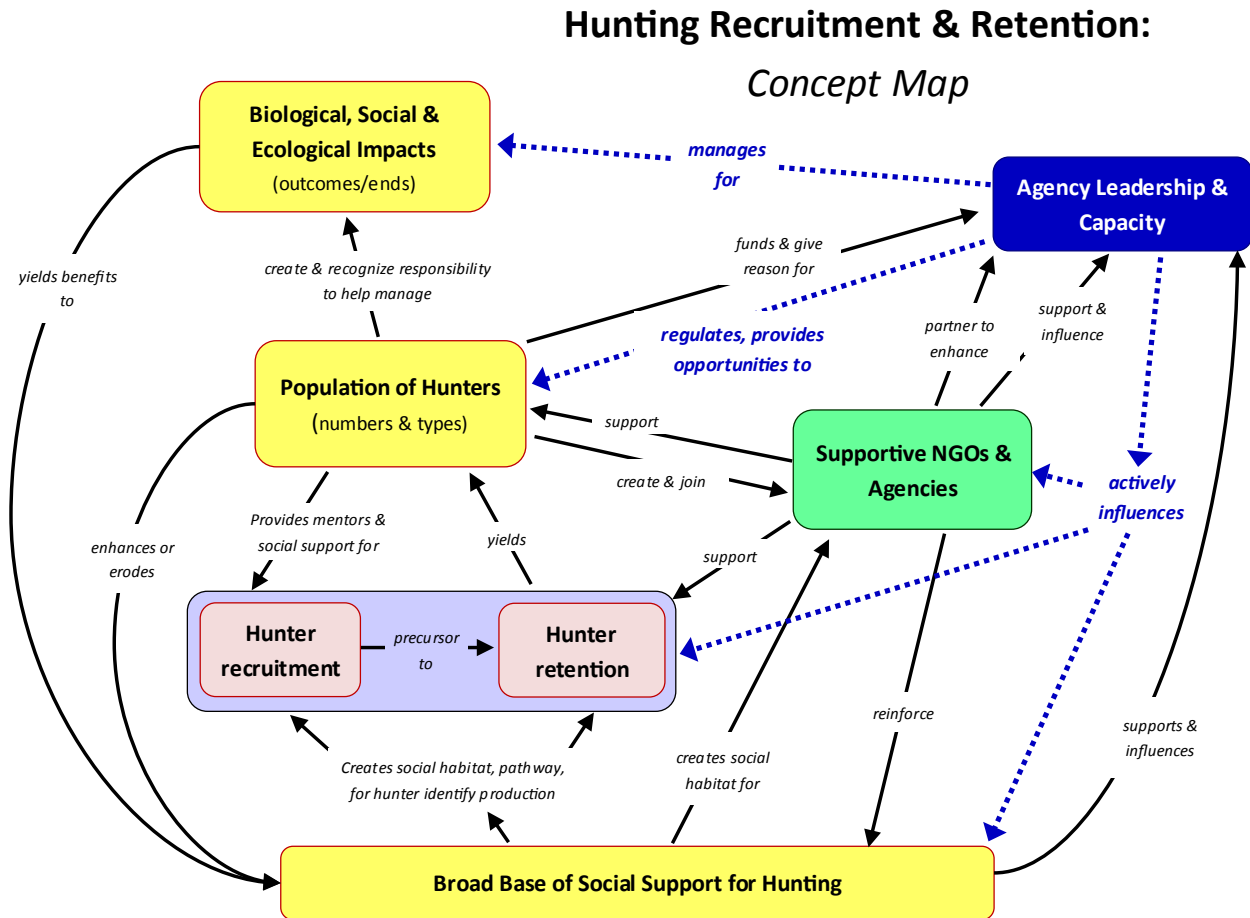


Figure 2. Concept map depicting the role of a state agency in the larger framework of hunter recruitment and retention (developed during 2010 DEC-HDRU Workshop)

1.3. Overview of the Hunting Social System

Hunter recruitment and retention cannot be attained by simply focusing on individual outcomes. It requires the creation and maintenance of a positive socio-cultural environment (Seng et al., 2007). HRR is, fundamentally, a *social process* experienced by an individual; that social process adapts or changes in response to (or varies according to) *social structures*, or regular patterns in society (e.g., laws, customs, economic systems, government systems) that affect the individual (Kelly, Ryan, Altman, & Stelzner, 2000). Processes are social actions that occur within a given context (i.e., the specifics of *how* the system works to affect the individual). In terms of HRR, steps in the process might include entry, socialization, development, and continuation. Structures provide opportunities or settings in which system participants interact (i.e., *what* is involved in the system) and operate at multiple scales ranging from localized (e.g.,

immediate family) to very broad (e.g., global society). Enck, Decker and Brown (2000) noted managers should make a concerted effort to “include a broader range of indicators when assessing HRR trends” and “concentrate more on understanding and influencing antecedents to participation and less on trying to influence participation directly” (p. 822). In other words, managers would benefit from enhanced understanding of both the social process and the social structures that affect hunting participation.

2. THE PROCESS OF HUNTER RECRUITMENT & RETENTION

Although recruitment and retention are often considered separately, this analysis posits that they are both stages in a larger, complex, linked social process. The process by which an individual is recruited or retained as an active hunter has been conceptualized using a combination of moral and cognitive development theories, innovation-adoption theory, and empirical evidence from previous research (Decker & Purdy, 1986; Wentz & Seng, 2000). The process depicts how an individual moves through the stages of becoming a hunter (Figure 3).

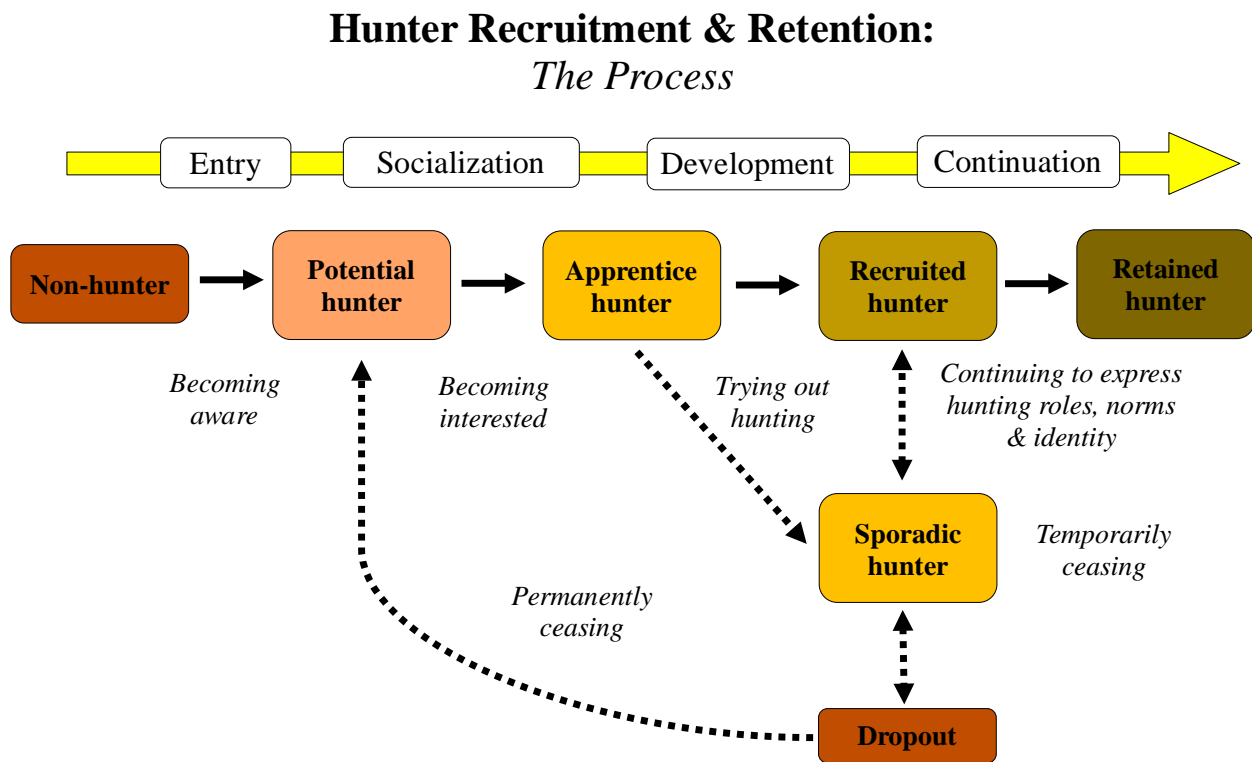


Figure 3. The process of hunter recruitment and retention.

[Adapted from Purdy et al.'s (1985) framework of incremental development for hunting involvement.]

2.1. The Entry/Socialization Phase

The first stage in the process is awareness. Awareness occurs when an individual recognizes, through various sources, that the potential to engage in hunting exists. Interest follows awareness. Interest refers to the development of positive thoughts and feelings regarding potential personal involvement in hunting. Participation (or lack of participation) in hunting

often depends directly on levels of awareness and interest. Eventually, growing awareness and interest is sufficient to push a potential hunter into the apprenticeship phase, where he/she learns skills and social norms from active hunters (Purdy et al., 1989).

In this stage, aspiring hunters engage in activity-related “rituals” and “rites of passage” to gain competence and develop appropriate attributes associated with the cultural activity (Enck, 1996). Initial participation occurs in the trial phase, when a potential hunter acts on his/her interest to engage in the activity for the first time. In the case of hunting, Wentz and Seng (2000) describe the trial as actually “going afield with an implement in search of game” (p. 12). However, apprenticeship-type hunting experiences where prospective hunters accompany others afield even without carrying a firearm may be equally important elements of the trial phase for certain populations (e.g., youth) (Clarke, Brown, & Higginbotham, 2004; Purdy et al., 1985).

2.2. The Development/Continuation or Cessation Phase

Once an individual has been recruited as a hunter, consistent engagement in hunting and hunting-related activities can lead to development and, ultimately, continuation (i.e., retention) of a hunting identity (Brown, Decker, & Enck, 1995; Enck, 1996). The continuation phase typically begins with strong support from social networks and begins to function more independently as time progresses – a socialization process that can take years (Littlefield & Ozanne, 2009). Repeated trials and consistent participation over time reinforce retention. An individual in the continuation phase perceives himself/herself as a hunter, identifies with the norms, values, and culture surrounding hunting, and may become a strong social and political proponent of hunting (Wentz & Seng, 2000). In effect, the individual has become immersed in the social world surrounding an activity and an active member of the community of practice. According to Unruh (1979), the social world is an ‘internally recognized constellation of actors, organization, events, and practices which have coalesced into a perceived sphere of interest and involvement for participants’ (p. 117). The nature of these social worlds and communities of practice can vary substantially in different contexts and may help to explain novel HRR pathways that diverge from the traditional model.

In cases where cessation of active hunting occurs, “dropouts” can be grouped into several categories. Some permanently cease participating in the activity and return to becoming potential hunters who, for whatever reason, elect not to reenter the hunting culture. However, many

dropouts continue to be active participants in the hunting social world. Some choose to resume hunting if the right conditions emerge (e.g., new hunting companions, new hunting opportunities). Others stop going afield but continue to support hunting by mentoring youth, sharing hunting stories, or participating in some other supportive functions. They may be spouses or children of active hunters who remain connected with (even enthusiastic about) some of the specific non-hunting activities that are part of the entire hunting experience. They may simply continue to appreciate the social values of hunting. Temporary or permanent dropouts who exhibit these characteristics remain important contributors to the hunting community, and may play an important role in HRR.

It is important to reiterate that hunter recruitment and eventual retention is a long-term process that can be non-linear. For instance, an individual may be in more than one stage at any point in time with respect to specific forms of hunting (i.e., as one considers adopting different specific hunting activities such as archery or muzzleloader use or pursuing different species such as turkey or waterfowl). From an overall HRR standpoint, though, such perspectives may be less important than general commitment to hunting. The time needed to advance from one stage to another depends on multiple factors including the age of the person, the economic and life stage they are in, and the amount of social (e.g., familial) support they receive (Seng et al., 2007).

Investigations of these particular participation stages and the social structures in which they operate can help researchers and managers understand factors influencing HRR and develop targeted strategies to account for a broad “social habitat,” or socio-cultural environment for hunting that encompasses both active hunters and hunting associates, or individuals who engage in hunting-support behaviors (Decker et al., 2001; Stedman et al., 1993). Stedman (2011) uses the term social habitat purposefully as an analogy to the habitat that wildlife needs to survive. Akin to the prey species they pursue, human hunters also need suitable habitat to thrive. This habitat may include elements such as access to land, but also supportive social structures (i.e., hunting associates) at multiple levels. These structures are described below.

3. SOCIAL STRUCTURES AFFECTING HUNTER RECRUITMENT & RETENTION

The adapted innovation-adoption model of the HRR process illustrates the path to individual participation in hunting and hunting-related activities (Figure 3), but it does not identify factors that influence the pathway. Garbarino (1982) outlined a general conceptual framework to explain the social and environmental contexts that impact individual actions. For example, individuals operating within certain social structures (e.g., rural areas where family and friends share traditional hunting backgrounds) are more likely to hunt than are individuals who operate in a distinctly different social and environmental context (e.g., urban areas without a strongly defined hunting heritage) (Stedman, 2012). In the case of HRR, this system can be viewed as interacting hierarchical layers that begin with the individual participant (and cognitions at the individual level) and include structural influences acting concurrently at the micro (e.g., family and mentors), meso (e.g., “neighborhood,” including community support networks and the local physical & social landscape), and macro (e.g., society) levels (Figure 4). Closer examination of the linked dynamic elements of this system could illuminate challenges and opportunities for agencies hoping to enhance and sustain HRR across geographical and temporal scales.

This section examines the various social structures that comprise the social habitat for hunting and impact the hunting social system, beginning with the individual participant and expanding to incorporate the micro, meso, and macro levels of social structures and the topics and concepts that operate at each level (Figure 4).

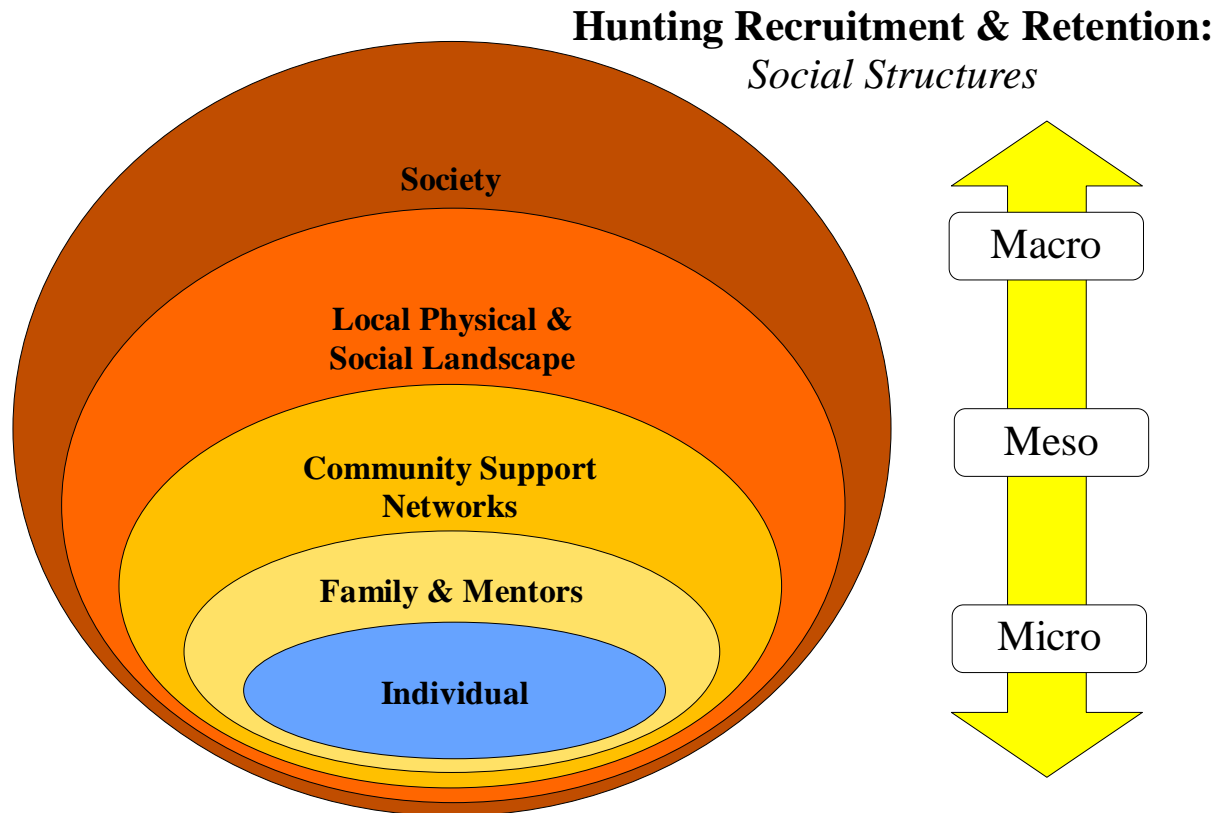


Figure 4. Nested levels of social structures that interact to influence individual behavior in the process of hunter recruitment and retention.

3.1. The Individual

Individuals are often viewed as the ultimate target of recruitment and retention, and efforts to influence the HRR process typically emphasize shaping individuals' behavior. Theoretical approaches from social psychology, a field that focuses on how people perceive, comprehend, and interpret the social environment around them (e.g., their families, their communities and organizations), can help to explain actions at the individual level (Pierce, Manfredo, & Vaske, 2001). These theories can be separated into two major categories: cognitive approaches and motivational/satisfaction approaches (Pierce et al., 2001; Vaske, 2008; Vaske & Manfredo, 2012). Both categories yield important information about individual actions in the HRR process, and both contribute to the development of hunter identity. A substantial body of research has examined the effects of these individual-level factors on hunting behavior, and each is discussed in more detail below.

Cognitions

To predict hunting behavior, it is important to recognize forces that compel individuals to act in certain ways. Cognitive approaches that examine concepts such as values, attitudes, and norms accomplish this by exploring how these human thoughts predict behavior (Pierce et al., 2001; Vaske, 2008). Some basic definitions are needed: Values are commonly defined as beliefs about desirable end states, modes of conduct, or qualities of life that are important to people (Rokeach, 1973). For instance, an individual might value a healthy land ethic centered on environmental conservation. Because values are firmly rooted in culture and closely tied to personal identity, they are typically difficult to change (Rokeach, 1973). Value orientations are value applied to specific issues (Vaske, 2008). For example, wildlife value orientations have been defined on a spectrum ranging from utilitarian to appreciative or “wildlife use” to “wildlife rights” (Fulton, Manfredo, & Lipscomb, 1996; Heberlein, 2012; Manfredo, Teel, & Bright, 2003; Vaske & Manfredo, 2012). These value orientations shape attitudes, which are summary evaluations of specific entities such as people, objects or actions (Pierce et al., 2001; Vaske, 2008; Vaske & Manfredo, 2012). Knowledge of the cognitive (e.g., beliefs) and evaluative (e.g., like-dislike, good-bad) dimensions of attitudes can help to predict and influence behavior (e.g., support for and participation in hunting). For instance, individual attitude orientations toward hunting and hunting outcomes (e.g., affinity for rural pastimes, love of nature, appreciation of animal welfare) are a crucial correlate of participation (Daigle et al., 2002; Hrubes et al., 2001; Purdy & Decker, 1986).

Studies also suggest that norms are important predictors of hunting intentions and behavior (Daigle et al., 2002; Hrubes et al., 2001; Stedman, 2012). Norms are standards of behavior that specify what people should do or what most people are doing (Cialdini, Kallgren, & Reno, 1991). Norms can be social (i.e., “standards shared by members of a particular social group”) or personal (i.e., “an individual’s own expectations, learned from shared expectations and modified through interaction”) (Schwartz, 1977). Although norms influence individual behavior, they are affected and shaped by referent groups operating at higher levels of social structure. For example, individuals living in a community where hunting is embraced as a way life would be much more likely recruits than individuals who come from an area where hunting is not a core element of local culture. The concept of normative influence is therefore embedded throughout analysis at the micro, meso, and macro social structures. The evolution and

expression of particular cognitions (especially social norms) may vary in distinct environmental and social contexts, and the structures that shape these cognitions have not been adequately explored.

Motivations & Satisfaction

Several other social-psychological metrics have also been used to predict hunting behavior. For example, motivational approaches represent a particularly effective way to explain why people do what they do (i.e., what initiates behavior). Motivations are broadly defined as cognitive forces that drive people to achieve particular goals (Pierce et al., 2001). Identification of hunting motives is therefore critical. Decker et al. (1984) described three types of motivations that inspire people to develop interest in, initiate, or continue hunting. *Affiliative-motivated* hunters engage in activities to establish, maintain, or strengthen relationships with others. These socially motivated participants often cease or desert when the support or expectations of their “affiliates” wane. *Achievement-motivated* participants are driven by a desire to maintain or improve level of performance. Successful recreational endeavors (often defined by game harvest) are usually the end goal for these participants, and hunting success may occur with or without social support. Achievement-oriented hunters often leave an activity when satisfactory levels of success cannot be attained. For *appreciative-motivated* hunters, spending time in nature to relax and escape everyday concerns is a motivation in itself. Though less common than their counterparts, appreciative-motivated participants are most likely to remain active in the continuation phase of hunting over an extended period of time. Over the past few decades this typology of motivations has helped managers identify and characterize certain subgroups of hunters, understand benefits associated with the activity, and highlight potential problems and sources of conflict (Pierce et al., 2001). However, recreation motivation research has since evolved to incorporate a broader range of desired outcomes (e.g., Manfredo et al.’s 1996 recreation experience preference scales). Among hunters, these changes may include the emergence of conservation-oriented motivations focused on maintenance of ecological processes and ungulate population management (Siemer et al., 2012). As social change progresses and motivations diversify based on shifting social structures and norms, the applicability of older models should be reconsidered in this changing HRR context.

Satisfaction-oriented approaches to understanding hunting behavior seek to explain why people evaluate their experiences in a given way based on actual outcomes or products (Vaske, 2008). Satisfaction metrics are particularly useful to managers because they often yield direct measurable information about performance (in contrast to cognitive-based metrics, which capture more abstract beliefs). However, a direct relationship between satisfaction and activity participation does not always exist (Vaske, 2008). Individuals may receive many different types of experience benefits from participation in a single activity, and certain motivations and satisfactions may outweigh others (Driver, Tinsley, & Manfredi, 1991; Hendee, 1974). Hunting represents a prime example of this case.

Although the portrayal of hunting typically centers on the benefits of harvesting game, non-harvest-related components of the hunt may be equally important for both hunters and hunting associates. Substantial research focused on differentiating the quality of the actual hunt (i.e., game harvest) from the quality of the overall experience has shown that the top motivation among hunters is often to experience nature and the outdoors (Decker, Brown, & Gutierrez, 1980; Grilliot & Armstrong, 2005; Hammitt, McDonald, & Patterson, 1990; Reis, 2009). Benefits such as seeing game and enjoying nature, relaxing, strengthening relationships with family and friends, perfecting skills, and developing fond memories are all critical parts of the hunting experience (Decker et al., 1980; Decker & Connelly, 1990; Duda, Bissell, & Young, 1995; Enck & Decker, 1994; Mehmood, Zhang, & Armstrong, 2003), and may be more important than tangible outcomes (e.g., game harvested). Individuals are generally more satisfied when their hunting experience helps them feel closer to nature (Mehmood et al., 2003), affording opportunities for deep participatory involvement that fosters a “vivid appreciation and awareness of nature’s many details and processes” (Kellert, 1996, p. 12). Hunters are also proud of outdoor skills, and many derive satisfaction in the knowledge that they are capable of relying on themselves for survival by providing meat for themselves and their families (Dizard & Muth, 2001). Hunter dissatisfaction is often tied to concerns about harvesting game, access to places to hunt, and the behavior or numbers of other hunters (Duda et al., 1996; Duda & Jones, 2009; Heberlein & Kuentzel, 2002; Miller & Vaske, 2003). When the hunting experience does not meet hunters’ expectations, satisfaction declines and the odds of desertion increase (Brunke & Hunt, 2007). Publicizing actual harvest rates and trends may aid in expectation management and partially mitigate this problem (Brunke & Hunt, 2008). Regulatory changes that constrain harvest

success or hunting opportunity can also lead to dissatisfaction (Fulton & Manfredi, 2004). Most recruits, especially younger recruits, need at least a moderate chance of success or they may abandon the sport for activities that provide faster and more consistent gratification (Schultz, Millspaugh, Zekor, & Washburn, 2003).

Collectively, research on hunting motivations and satisfaction suggest that managing for expectations and multiple satisfactions may be the most prudent strategy (Decker et al., 1980; Responsive Management & National Shooting Sports Foundation, 2008). Because some recent and potential hunting recruits may have unknown and potentially different motivations and satisfactions, the need for more research into these traits of those individuals may be a priority. Furthermore, understanding how motivations of these hunters are developed and influenced by social structures will be critical to any effort to influence their engagement in hunting and help them establish realistic expectations for their hunting experiences. Discussions of higher-level social structures in the remainder of this document outline the basic socialization process impacting individual cognitions, motivations and satisfactions, including the “actors” (i.e., individuals, groups, and social entities) who facilitate the learning of values, beliefs, norms, and subsequent behaviors and skills associated with a particular identity as well as the “targets” (i.e., individuals) who receive it (Stedman & Heberlein, 2001).

Self-identity of Hunters

Research on cognitions, motivations, and satisfactions yields vital insight into a key outcome of sustainable HRR efforts, individuals who self-identify as hunters. Ditton et al. (1992) argued that hunters are not truly recruited until they understand and feel a sense of belonging to the hunting social world to the point where it has become an important part of their identity. For hunters who enter the activity from a non-supportive social world, this sense of belongingness may be difficult to achieve. Identity development therefore reflects a situation where individual perceptions (of one’s self as a hunter) are nested within and continuously influenced by micro, meso, and macro social structures. For example, hunter identity development involves a set of activities and experiences that enable a participant to create a representation of him/herself and corresponding interpersonal networks that embodies an array of hunting traditions or subcultures (Brown, Decker, & Enck, 1995; Deaux & Martin, 2003). Modern hunters are constantly affected by these identities (McCorquodale, 1997; Organ & Fritzell, 2000), their behavior is shaped and

reinforced through recurring contact with others who share (or challenge) their particular perspectives. Research has shown that hunters' self-perceptions and identities are more strongly associated with close contacts such as family members and hunting companions (e.g., micro social structures), than hunting industry, hunting organizations, or agencies (e.g., meso social structures), but these associations may be different for non-traditional hunters (Enck, 1996). The likelihood of hunting retention increases as individuals solidify these social ties and become more immersed in the social world of hunting. Reinforcement occurs through repeated participation and increasing specialization as individuals reaffirm their identities, which become a source of pride and self-worth (Lee, Shafer, & Kang, 2005; Lee & Scott, 2004). An enhanced understanding of the identity-building process and the multi-level factors that impact it could inform HRR efforts.

3.2. The Micro Level: Family Influence & Hunting Mentors

The “micro” level of social structure refers to fundamental (more intimate) social systems in which the individual is an active participant, such as immediate family and local networks of close friends or hunting mentors. Research has consistently shown the critical importance of this level of influence on individual behavior across a range of topics, and much has been said and written about traditional, micro level pathways of socialization into hunting. However, the HRR challenge increases as these traditional pathways become less prevalent. Micro level factors affecting HRR are discussed in more detail below.

Family Support

Numerous studies show that family and close peer support are key predictors of long-term hunting participation (Decker et al., 2001; Purdy et al., 1985; Stedman & Heberlein, 2001). Strong social influences, particularly those involving immediate family members, increase the likelihood that hunters begin at an earlier age, perceive themselves as more involved, increase likelihood of license purchase, and demonstrate higher levels of hunting activity (Decker, Purdy, & Brown, 1986). Decker & Mattfeld (1988) described this traditional pathway into hunting: “Becoming a hunter is not a single event. It begins at an early age. Older family members first share stories, then later share some responsibilities associated with hunting. There are family meals where game is the featured entrée. Involvement in hunting seems natural... motivations

for early adoption and possible long-term participation in hunting are nurtured in a predictable and traditional family-centered process” (p. 11). This family support and interaction can also influence value orientations and attitudes, which may affect wildlife-dependent recreation support and involvement (Zinn, Manfredo, & Barro, 2002). Pre-hunting (apprenticeship) opportunities for youth (e.g., youth participation in hunting-related activities or “tagging along” in a non-consumptive capacity) encouraged by a nurturing family are critical, and many parents see these as instilling safety skills and an understanding of environmental stewardship and ethical behavior (Clarke et al., 2004; Purdy et al., 1985).

Researchers have found distinct differences between family supported and non-family supported hunters (Decker et al., 1984). Traditionally, a majority of hunters were initiated into hunting by their fathers or another male relative or friend, typically by early adolescence (Clarke et al., 2004; Purdy et al., 1989; Stedman & Heberlein, 2001). These family supported hunters are more likely to hunt at an earlier age and tend to develop a richer and more complex engagement with hunting. For these hunters, hunting is often ingrained as a key component of their life experience. For instance, hunter education program graduates for rural areas with hunting fathers are more likely to continue hunting than their urban counterparts (Purdy et al., 1989). Enduring contact with hunting-affiliated family and friends tends to sustain participation throughout these hunters’ lives. Conversely, more than half of non-hunters do not have family or friends that hunt and most lack a close social connection with hunting (Mehmood et al., 2003). Among active hunters without family support, initiation typically occurs at an older age and many begin to hunt for recreational or affiliative reasons (i.e., to establish, maintain or strengthen relationships with partners, friends, or co-workers) (Boxall, Watson, & McFarlane, 2001; Purdy et al., 1989). Furthermore, the origin and nature of these recreational or affiliative motivations among non-family supported hunters may be very different today than they were 20-30 years ago. With fewer links to the activity, weaker self-perceptions as hunters, and fewer affiliations within the hunting social world, non-family supported hunters are less likely to exhibit continuation and enduring participation (Decker et al., 2001; Enck et al., 2000).

Hunting Mentors

Considering the documented importance of close personal social support in hunting initiation and continuation, the establishment of hunting apprenticeship opportunities featuring

positive role models or mentors has been a common programmatic theme for decades (Enck et al., 2000; Purdy et al., 1989; Wentz & Seng, 2000). As Duda et al. (1995) noted, “it takes a hunter to make a hunter” (p. 12). Although this adage may not hold true in all situations and leaves little room for innovation, it effectively illustrates the traditional pathway into hunting and underscores the importance of linkages and networks that preserve vital hunting traditions. As a result, nearly every state in the U.S. has implemented targeted recruitment efforts such as youth hunts and non-governmental organization (NGO) programs designed to provide a gateway into hunting (Byrne, 2009; Seng et al., 2007).

Based on research highlighting the value of social support in HRR, the DEC & HDRU combined to create a New York Apprentice Hunter Program in late 1980s centered on personal apprenticeship experiences (field experiences shared with a hunting mentor) and social mechanisms that maintain hunting participation (linkages with mentors and peers who hunt). The program was specifically aimed at youth who had expressed interest in hunting by attending a mandatory hunter education course but were not in a situation where apprenticeship opportunities or social support were likely to occur naturally. However, following the treatment, youth matched with mentors progressed no further in stages of hunting involvement than youth in a control group (Enck et al., 1996). Researchers have attributed the relative failure of the program to an over-emphasis on simply getting potential hunters out hunting and an inability to effectively replicate the range of conditions that produce the family-initiated, experience-rich “traditional hunters” (Decker & Mattfeld, 1988). In reality, the process of socialization into the skills, social norms, and values of hunting culture (i.e., the development of a strong social world affiliation) can take years or even decades (Littlefield & Ozanne, 2009). Achievement of an appropriate balance between the needs of the individual participants (i.e., the mentors) and the needs of system (i.e., a supply of mentors to socialize new hunters) also proved to be difficult (Enck, Mattfeld, Christoffel, & Decker, 1997). Nevertheless, efforts such as the New York program have revealed key elements of successful apprenticeship: technical competence through hands-on learning and/or social competence through a process of socialization and social control that helps the apprentice to understand the characteristics, traits, norms, and expectations that go along with being a hunter. Effective mentoring programs may therefore transcend the micro level of social structure, incorporating community-based, meso-level relationships and activities that

help students positively identify with a social group and stay connected with hunting community (Benson & White, 1995; Byrne, 2009; Ryan & Shaw, 2011; Seng et al., 2007).

Evidence indicates that HRR programs should also start early. The highest hunting retention rates over time have occurred in the under age 20 cohort (Boxall et al., 2001), and programs geared towards youth therefore focus on an audience that is most likely to be retained in the activity after joining. However, the extent to which this observation is related to the actual age of introduction to the hunting or the broader existence of enabling social support structures (i.e., family-supported hunters with mentors are more likely to start hunting earlier) is unclear. Regardless, one obvious conclusion should be reiterated: as fewer people hunt, fewer children are exposed to hunting. Interventions may be necessary to reverse this “death spiral” (Tanger & Laband, 2008) and offset hunter loss through the recruitment of new hunters (Poudyal, Cho, & Bowker, 2008), ensuring that the biological, economic, and social benefits of a robust hunting community are realized.

3.3. The Meso Level: Community Support Networks & the Local Landscape

The “meso” level of social structure refers to the entities and contexts that create a physical and social landscape in which the micro systems operate. Meso elements include a variety of factors such as community support networks (including more distant peers and extended family) and access to land and game populations that influence hunting and hunting opportunities. Many HRR programs and studies have focused on individuals and families; few consider the influence of broader social structures on acceptance of and participation in hunting. The effects of these higher-level structures on micro levels of the hunting social system (i.e., individuals and immediate families), are a critical component of HRR that contribute to the social habitat for hunting. Meso-level factors are discussed in more detail below.

Community Support Networks

Analysis at the micro level has shown that the social environment for hunting is of critical importance for HRR (Stedman, 2012). Hunting socialization and development has to occur somewhere and, traditionally, the rural family has provided this foundation. However, the meso level also considers the importance of secondary socializing agents such as peers, extended family, community networks, and institutions. In rural areas, these secondary agents often take

over for males without hunting fathers and the hunting social system may need little facilitation, even for individuals with little family support (Stedman & Heberlein, 2001), though this is not true in all cases. Much less is known about the social aspects of hunting in urban or suburban contexts. For example some urban dwellers may have exposure to hunting culture; other urbanites may have no experience with hunting or rural culture that supports hunting. More intentional recruiting efforts may be needed in the latter context. Secondary socializing agents at the meso level can play a much larger role for these non-family supported hunters from non-rural backgrounds (Boxall et al., 2001; Purdy et al., 1989), but additional research is required to test this possibility.

Purdy et al. (1989) acknowledged that lasting commitment to hunting depends greatly on the degree to which recruits “accept and identify with the roles, values, and norms of social groups that are part of the hunter population” (p. 22). In fact, as the earlier discussion of individual cognitions indicated, several studies have found that subjective norms (i.e., perceptions of social pressure or acceptability to participate in an activity) are among the most powerful antecedents of support for hunting behavior (Campbell & Mackay, 2003; Daigle et al., 2002; Hrubes et al., 2001). These findings support the importance of peer influence on HRR (Ljung, Riley, Heberlein, & Ericsson, 2012; Schultz et al., 2003), and active hunters can play a crucial role in this socialization process. Research suggests that encouraging hunters to share knowledge and advocate for their sport is critical to HRR (Ryan & Shaw, 2011). Highly specialized hunters may be most committed to this role because their personal identity is most closely tied to the hunting social world (Ditton et al., 1992); however, these highly-specialized hunters may not be seen as peers among less experienced or non-traditional hunting audiences. For the non-hunting public, non-hunters who support hunting may function as more effective bridging agents that cultivate interest in the activity (Peterson, 2004). Because social norms are such powerful drivers of hunting participation, HRR will succeed to the degree that hunting can be tailored to fit within the social norms of local communities (Mehmood et al., 2003). Clubs and informal organizations that promote hunting at the community level represent important social vectors for developing norms and recruiting/retaining hunters (Benson, 1993; Benson 2010).

Hunting Associates

Related to the emphasis on hunting being part of the local community system, the hunting social world involves a large population of non-hunters who are involved with hunters and hunting although they do not themselves hunt (i.e., hunting associates). Stedman and Decker (1993) reported that many people who do not pursue game in the field still “associate with hunters, participate in hunting-related activities, have beliefs about hunting similar to those of hunters, and receive benefits from hunting” (p. 2). In fact, a 1992 survey of New York residents revealed that nearly two out of every three non-hunters was partially tied to the hunting social world through participation in hunting-related activities or associations with active hunters (Stedman et al., 1993). Though these supportive non-hunters may not share hunters’ deeply held beliefs and perceived benefits of the activity participant, they remain an integral part of hunting culture and a foundation of social support needed for HRR. As Stedman (1993) noted, the idea of preserving hunting by paying attention to recruitment and retention is “more than preserving an activity or even a set of activities, but rather a tradition in rural culture and a way of interacting with nature” (p. 178). The link between hunting and nature appreciation for individuals living in urban/suburban environments could be important as well. Recruitment and retention efforts could therefore consider non-hunters who are linked to hunting but hold different interests and beliefs than hunters. Even if these hunting associates do not display self-perceptions as hunters, they may represent a broadened ideology surrounding hunting (Decker et al., 2001; Stedman, 1993). In other words, hunting associates are a historically overlooked stakeholder group whose perceptions and support networks warrant more attention for the possibly important or even essential role they play in HRR (Stedman & Decker, 1996). Stedman’s research on the hunting social world, though useful, emphasized the presence and function of non-hunters in relatively traditional rural settings. It is important to extend this line of research into different types of environments as well, rather than either assuming that hunting associates play a similar role regardless of setting type or that their role may be minimal.

Physical Access to Hunting Land & Opportunities

Research suggests that different types of hunters (e.g., outdoor enthusiasts, game harvesters, non-harvesters) display very different types of experience-based setting preferences (e.g., accessibility, use density, presence of non-recreational users, degree of site management)

(Floyd & Gramann, 1997). These landscape-level characteristics can have major impacts on hunting-related service and marketing strategies. The powerful influence of access to land on hunting participation and culture is perhaps best illustrated by the public versus private land dichotomy. Hunters in New York and other states have consistently indicated a preference for free access to private hunting lands for waterfowl hunting (Enck, Brown, Sharick, & Swift, 2006; Enck & Decker, 1990), deer hunting (Enck & Brown, 2008; Enck & Decker, 1991; Poudyal, Bowker, Green, & Tarrant, 2012; Stedman, Bhandari, Luloff, Diefenbach, & Finley, 2008), and trapping (Siemer, Batcheller, Brown, & Glass, 1991). In fact, a 1991 study of NY landowners suggested that most hunting in the state occurred on private lands with free access (Siemer & Brown, 1993), and a 2003 study of PA hunters reiterated the critical role that private lands play in hunting culture (Stedman et al., 2008). Stedman and colleagues (2008) also found that private land hunters differed from public land hunters in several crucial ways that supported management objectives: they were more committed to hunting, hunted more days, knew more other hunters, harvested more deer and displayed stronger recognition of ecological impacts of deer overabundance. These results suggest that a general conservation and stewardship orientation might be stronger in hunters who frequent private lands, whereas public land hunters fail to develop a sense of ownership, responsibility to place, and corresponding land ethic. Consequently, the provision of additional public lands may not be as crucial to long-term HRR success as facilitating access to private land.

Although many hunters continued to report significant time spent hunting on free private lands (Enck, Stedman, & Decker, 2011), increased posting of private land has been and continues to be a major concern in New York and throughout the U.S. (Brown et al., 1985; Brown & Messmer, 2009; Jagnow et al., 2006; Stedman et al., 2008). Parcelization, or the division and downsizing of privately owned land parcels, has also impacted hunting in states such as New York (Germain, Brazill, & Stehman, 2006). In fact, researchers have posited that documented deer herd increases in subdivided or parcelized exurban landscapes may be partially caused by restricted hunter access to these fragmented areas (Lovely, McShea, Lafon, & Carr, 2013). Changes in habitat – especially the decline in early successional habitat – affecting some small game species in particular (e.g., cottontail rabbit and ruffed grouse) on private lands may pose another problem (Stedman, Broussard-Allred, & Dayer, 2010). All of these trends affect HRR. In some cases (e.g., Texas), decrease in hunter participation has been directly attributed to

a lack of places to hunt, high lease rates, and a perceived scarcity of game on public land (Clarke et al., 2004). Poudyal and colleagues (2012) acknowledged the value of private land hunting opportunities, concluding that “sustaining hunting as a recreational and economic activity may require more facilities and hunting grounds outside of existing public lands” (p. 152). Considering the critical role of private land hunters (relative to public land hunters) as environmental stewards and stalwarts of hunting culture, ensuring continued access to private hunting land and fostering positive landowner-hunter interactions should be a top priority (Siemer & Brown, 1998). Access and preservation of wildlife habitat provides an added benefit in the form of incentives for non-hunting conservationists, reducing socio-political tensions between historically conflicting stakeholder groups (Clark, 2007).

Other types of resource-related issues that constrain hunting opportunities have also been well documented. These barriers include state and federal laws or regulations that serve to constrain hunting opportunities (e.g., short seasons, small bag limits) and prohibitive costs associated with hunting and hunting equipment (Brunke & Hunt, 2008; Duda et al., 1996; Fulton & Manfredo, 2004; Heberlein & Thomson, 1997; Miller & Vaske, 2003; Seng et al., 2007; Wright et al., 2001). Many of the perceived constraints that impact individual hunting behaviors emerge from activities and actions occurring at higher social structures (e.g., meso-level physical landscapes and meso- and macro-level institutional policies), and future models of hunting behavior should account for these broader influences. Nevertheless, some constraints can be overcome. For example, in New York, the growing deer population of the last two decades made possible two changes in deer harvest regulations that theoretically should have improved deer hunting opportunity. One of these was the issuance of more than one antlerless deer permit to hunters, thereby allowing them to harvest deer as needed for deer management objectives yet stay afield to enjoy hunting with friends and family. The other regulation change that increased hunting opportunity for some individuals and improved management effectiveness was the ability for a person to consign a deer management permit to another hunter; if that other hunter had filed his/her licenses, this consignment possibility could allow that person to continue hunting. Additional research on resource-related constraints could help management agencies identify barriers to hunting participation, meaningful incentives (e.g., free licenses, access-related programs) and tools (e.g., skill development workshop opportunities) that could facilitate HRR (Byrne, 2009; Seng et al., 2007; Thomas & Lueck, 1996).

3.4. The Macro Level: Society & Broad Social Change

The “macro” level of social structure refers to broader societal processes and influences on individual and group behavior; it reflects ideological and institutional patterns and changes in American culture (Garbarino, 1982). For any social system to be sustained, system structure must adapt to these changing conditions (Kelly et al., 2000). In the case of hunting, macro changes include a suite of factors such as shifting demographics, urbanization, and a rapidly evolving concept of the human-environment interactions. Although macro-level changes have profound impacts on HRR, they are often perceived to be outside the scope of agency influence. This perception is true to some extent, but research has consistently demonstrated that HRR is affected by many forces that – while outside of direct agency control – are valuable to understand because they may help reveal factors constraining the effectiveness of HRR initiatives and interventions. In a sense, to extend the ecology analogy, these macro-level factors may set the carrying capacity bounds of the social habitat for hunting.

Most researchers and practitioners are beginning to realize and respond to the profound effects of societal transitions on HRR, but a great deal of uncertainty is associated with these macro level changes. An enhanced understanding of broader social forces (i.e., macro-level) affecting meso and micro social structures and, ultimately individual behavior, is absolutely essential to the design and development of effective HRR initiatives (Stedman, 2012). Moreover, wildlife agencies may work collaboratively with other agencies (such as, for example, those involved in planning and economic development) for whom responding to these sorts of changes is at the core of what they do. Macro-level factors influencing HRR are discussed in more detail below.

Shifting Demographics and Urbanization

Demographic change in the U.S. is steadily working against traditional hunting socialization mechanisms that have emphasized Caucasian, rural, two-parent families with extended family present. All of these phenomena are becoming less prevalent. For instance, because racial/ethnic minorities are the fastest-growing population segments in the U.S. and New York (U.S. Census Bureau, 2012), it is important to recognize that research has shown that these groups have limited exposure to hunting areas and hunting values and are drastically under-

represented in the hunting population (Enck et al., 2000; Floyd & Lee, 2002; Poudyal et al., 2008). For instance, in the 2006 and 2011 national surveys on hunting and fishing, about 6-8% of all hunting participants were racial/ethnic minorities (U.S. Fish & Wildlife Service, 2007, 2012), even though these groups comprise approximately 36% of the total U.S. population (U.S. Census Bureau, 2012). Recruitment and retention of hunters from these segments of the population has consistently proven to be difficult.

Urbanization, rural out-migration fueled by a northern “brain drain” and relocation of aging baby boomers to the Sunbelt, and a decline in two-parent households have also hindered the passing of traditional utilitarian values from one generation to the next (Zinn, 2003). About 80% of all Americans now live in cities and urban environments, yet only 42% of the total hunting population resides in these areas (U.S. Fish & Wildlife Service, 2012). It is widely believed that urbanization has resulted in a society that is increasingly detached from nature, generating an array of concerns regarding the physical, psychological, and emotional consequences of nature deprivation that have been termed “nature-deficit disorder” (Louv, 2008). Investigations of this hypothesis have demonstrated that American’s participation in nature-based outdoor experiences is indeed decreasing (Charles & Louv, 2009; Clements, 2004; Hofferth, 2009; Pergams & Zaradic, 2008). The synergistic combination of urbanization and nature-deficit disorder produce a grave scenario for HRR, where larger and larger portions of the U.S. population become isolated from the hunting experience and associated benefits over time (Clarke et al., 2004). Researchers have suggested that the trend towards an urbanized, more educated public may impact predominant wildlife value orientations, potentially precipitating a shift from wildlife use and utilitarianism to wildlife protection and mutualism (Manfredo et al., 2003; Zinn, 2003). However, other scholars have noted that evidence to support a hypothesized shift towards a protectionist-oriented viewpoint is lacking (Butler, Shanahan, & Decker, 2003). Additional research is needed to discern this pattern and evaluate its impact on hunting. Another aspect of social transformation is not disputed: the accelerated restructuring of rural communities stemming from increasing population mobility. These changes in rural areas result in growing separation between immediate and extended family and a rise in the number of seasonal residents, retirees seeking nature, and exurban commuters on smaller land parcels (Winkler, Field, & Luloff, 2007). Research suggests that none of these changes are conducive to hunting.

Women represent one demographic group of potential hunters that may have a particularly strong impact on the future of hunting in the U.S. (McKenzie, 2005). Reports reveal an increase in numbers of adult females buying hunting licenses in recent years (Duda et al., 1996; Floyd & Lee, 2002; Heberlein, Serup, & Ericsson, 2008) and some evidence suggest that the percentage of the U.S. female population that hunts continues to increase (Adams & Steen, 1997; Responsive Management & National Shooting Sports Foundation, 2008). Despite these trends, females remain a small portion (about 11%) of the overall hunting population (U.S. Fish & Wildlife Service, 2012). Consequently, most wildlife agencies are now seriously considering women as potential hunters and beginning to account for the powerful role women play in HRR. Efforts have centered on the different pathways and constraints that men and women may experience on the route to HRR (Covelli, 2011). Girls in rural families are assumed to develop a notion of self and proper gender roles through identification with their mothers, and therefore may not be socialized into “masculine” hunting-related rituals (McCarty, 1985; Stedman & Heberlein, 2001). Others have attributed the gender difference to micro-level factors such as value orientations, with males holding more utilitarian perspectives and females more protectionist perspectives (Zinn et al., 2002). Motivations for women may be slightly different as well. A study of the N.Y. Becoming an Outdoor Woman class showed that, compared to males, women’s hunting participation may be fueled by a stronger desire to get away from stress and be close to nature (Connelly, Decker, & Stout, 1996). Regardless of possible explanations for the hunting gender gap, the fact that women are involved in family decision-making and influencing children’s outdoor activities is not disputed. Thus, their attitudes toward hunting are crucial predictors of their children’s hunting behavior (McFarlane, Watson, & Boxall, 2003). Women’s pathways into hunting are, of course, context-dependent, but husbands (more so than fathers or friends) have been identified as important mentors (Clarke et al., 2004; Heberlein et al., 2008; Heberlein & Thomson, 1996; McFarlane et al., 2003). Other studies have confirmed that workshops for female hunters cannot ignore two key elements that are fundamental components in females’ hunting participation: the spouse (or significant other) and the family (Adams & Steen, 1997). Stedman and Heberlein (2001) showed that, in rural areas, meso-level agents of socialization for female hunters (i.e., peers and extended family) had only a marginal effect on fostering hunting participation.

Research has shown that young to middle-aged males (particularly white males) have greater recruitment rates, retention rates, and license purchasing probabilities than any other demographic group (Gude, Cunningham, Herbert, & Baumeister, 2012), making that population the easiest target for HRR. However, it appears that efforts to recruit and retain potential hunters outside of this target demographic, though more difficult, may be necessary. Census projections indicate that the diversity of the U.S. population will continue to increase. By 2050, over 50% of Americans will be non-white and the percentage of American's living in cities will also rise (U.S. Census Bureau, 2012). Considering these patterns, there is considerable debate in the literature as to whether agencies concerned about HRR would be better served targeting existing and/or lapsed hunters or expanding their focus to develop a new base of support for hunting and other conservation-oriented activities that caters to the nation's shifting demographic structure (Duda et al., 1996; Gude et al., 2012; Mehmood et al., 2003).

Public Perceptions & Media Portrayal of Hunting

Hunting has a long and complex history in the eyes of the American public. For centuries, hunting was a critical component of the subsistence lifestyle in rural areas. Later, hunting was revered as a masculine rite of passage (Littlefield & Ozanne, 2009, 2011) and hailed as a hallmark of utilitarian conservation. Recently, as public preferences shift toward non-consumptive forms of outdoor recreation activities (Li, Zinn, Barro, & Manfredi, 2003; Zinn, 2003), public support for hunting has wavered.

Most studies show that over 75% of Americans approve of the general practice of hunting (Duda & Jones, 2009; Duda, Jones, & Criscione, 2010; Responsive Management & National Shooting Sports Foundation, 2008; Ryan & Shaw, 2011). However, some hunting outcomes (e.g., hunting for food, hunting for tourism and revenue generation) (MacKay & Campbell, 2004; Responsive Management & National Shooting Sports Foundation, 2008) and certain hunting methods (Kilpatrick, Labonte, & Barclay, 2007; Messmer, Cornicelli, Decker, & Hewitt, 1997; Urbanek, Nielsen, Davenport, & Woodson, 2012) are deemed more acceptable than others. Major objections to hunting center on concerns about negative hunter behaviors (Siemer, Brown, & Decker, 1990), general misconceptions about safety or the welfare of hunted animals, and evolving opinions about ethical or humane treatment of animals (Muth & Jamison, 2000; Responsive Management & National Shooting Sports Foundation, 2008; Seng et al., 2007). In

fact, animal rights discourse and philosophy may have a strong negative influence on overall support for hunting (Boxall et al., 2001; Hooper, 1992; Hutchins, 2008; Wright et al., 2001). Although the practical role of hunting in conservation may be obvious to some, its direct link to broader ecological objectives and environmental stewardship is less easily recognized (Holsman, 2000). Moreover, although many hunters consider themselves to be conservationists (Knezevic, 2009), the general public may not agree with the conservation value of hunting.

Messages about what it means to be a hunter are widely available to the public via magazines, books, television, internet, etc., but interpretation of these messages varies (Chaffin, 2009). The media portrayal of hunting often perpetuates the proliferation and commercialization of a contrived hunting experience (Agee & Miller, 2008); it rarely represents the personal, cultural and land-based linkages that are vital to an enduring hunting heritage. In fact, television programs often promote unrealistic harvest expectations and glorify select harvests of trophy animals by privileged individuals (Agee & Miller, 2008). As more organizations sponsor and rely on the growing hunting television show base, the public's interpretation of these media should be carefully considered and ways to affect the messaging identified and tested.

Furthermore, the general public is often exposed to hunting stories that have a negative journalistic bent (Beucler & Servheen, 2009; Chaffin, 2009; Responsive Management & National Shooting Sports Foundation, 2008), emphasizing killing, dominance, skill and prowess, and stereotypical images of white male hunters (Kalof & Fitzgerald, 2003). Non-hunters' interpretation of these hunting messages can be detrimental to HRR, impelling hunting magazines to proclaim that hunters are under siege by environmentalists and "antis" who fail to comprehend the nature-loving side of hunters (Knezevic, 2009). However, rarely – except within hunting circles - is hunting presented as a moral good or civic act, and few sources consistently extol the virtues of responsible hunting practices (Cahoone, 2009; Peterson, Hansen, Peterson, & Peterson, 2010). To confound this problem, the obvious commercialization of hunting (e.g., television programming, videos, and expansion of large retail stores such as Cabela's, Bass Pro Shops and others) may be enabling an increase in what Aldo Leopold (1943) referred to over a half-century ago as "gadgeteers": people focused on technology that can be applied to hunting who miss the primitive virtues of authentic hunting experience. Regardless, what emerges is a clear need to better communicate with non-hunters requiring research to guide efforts to craft messages that target and resonate with specific populations (e.g., urbanites, non-hunters)

(Campbell & Mackay, 2003; Kendall, Lobao, & Sharp, 2006). A comprehensive approach to HRR could include articulating benefits and outcomes of hunting, with emphasis on the unique role that hunters play in society and an invitation to be part of a group contributing to habitat protection, wildlife management, conservation education, and quality outdoor time with family and friends (Ryan & Shaw, 2011; Southwick, 2009). Potential mechanisms for conveying this message vary, but celebrities and prominent public figures have proven to be an important source for attitudinal and behavior change in other sectors including marketing and purchasing (Bush, Martin, & Bush, 2004), politics (Jackson & Darrow, 2005), and health (Valente & Pumpuang, 2007). Research is needed to explore this potential communication pathway as it relates to HRR.

The rise of technology may be rapidly transforming hunting and the hunting social world, but the impacts of this transformation are not yet clear. Some studies suggest that a growing attraction to electronic, virtual media (i.e., videophilia) is shifting attention away from hunting and other outdoor activities (Robison & Ridenour, 2012). Other accounts highlight the facilitative role online networks and cyberspace connections can play in the overall enjoyment of the hunting experience (Miller, 2005). Creative mechanisms that capitalize on virtual media and Internet resources to disseminate accurate, objective information about hunting and the benefits associated with hunting may become an essential component of a sustainable future for HRR. For example, whether or the extent to which social networks enabled via electronic social media are replacing the role of family and community for hunters lacking these support systems is unknown. If improved communication technologies leading to improved communication opportunities are coupled with open-minded dialogue, hunters and other types of environmental advocates may begin to realize that their fundamental conservation goals and objectives are not so different. This may in turn help foster a broad base of social support for hunting that is a critical component of the HRR concept map (Campbell & Mackay, 2009; Knezevic, 2009).

Hunting as a Civic Act

A new wave of books underscores a trend that may precipitate a transformation in the traditional hunting ethic and a shift in the way that hunting is perceived (Cerulli, 2012; McCaulou, 2012; Pelligrini, 2011). In this new line of thought, hunting is no longer regarded as a utilitarian sport but an ecological and civic responsibility (Ljung et al., 2012). For example, in “The Mindful Carnivore: A Vegetarian’s Hunt for Sustenance” (Cerulli, 2012), the author

describes his transition from non-hunting, animal-loving environmentalist to conscientious hunter. This philosophical shift is often associated with an epiphany that hunters can actually be “environmentalists” and animal welfare advocates and a realization that hunting can be a humane, ethical, and eco-friendly way to put meat on the table (McCaulou, 2012; Pelligrini, 2011). These books may represent a harbinger of change with respect to public attitudes toward hunting, and research is needed to move beyond experiential accounts of individuals to explore this societal-level trend in more detail.

This potential new gateway into hunting may be accompanied by a set of practices and expectations that define ethical behavior from new angles, creating a context that may ultimately mirror the traditional hunting ethic where the activity is viewed as an authentic connection between humans and other living creatures that exemplifies the enduring interdependence between the natural world and modern society (Peterson et al., 2010). For instance, a “civic purpose” hunter operating under different societal norms might engage in the activity for a variety of reasons. He/she may see himself/herself as an environmental steward and conservationist who, in the absence of extirpated predators, works to regulate overabundant ungulate populations and preserve ecosystem health. He/she may recognize the need to reduce risks associated with human wildlife interactions (e.g., deer-vehicle collisions, disease transmission) and hunt to preserve and maintain community health – especially along the urban-rural fringe. He/she may hunt to promote procurement and consumption of locally-grown meat, thereby fostering a sense of community independence and vitality that typically wanes in import-oriented societies increasingly detached from nature. Overall, a revitalized image of hunting as a conservation-oriented activity (as opposed to a consumption-oriented activity) has challenged a common perception of a hunter as one who purchases a license and harvests animals for sport. This broadened set of motives and values may help to create a “new face” of hunters potentially more appealing to diverse constituencies (Beucler & Servheen, 2009; Hooper, 1994; Stedman & Decker, 1993). As firsthand exposure to a new type of hunting rises (i.e., same activity, different objectives) and awareness of hunting-related benefits increases, these changes may contribute to a broader social habitat that is more conducive to hunting and general HRR. Though the amount of experience-based writings devoted to this topic is growing, many of these suppositions have yet to be empirically tested.

As some authors have noted, hunting proponents could begin the political task of framing hunting as a significant contributor to sustainable livelihoods by emphasizing links between hunting and wildlife conservation and highlighting the role of hunting in production of local and free range food (Peterson et al., 2010). For instance, locavores (defined as people who consume food grown locally whenever possible) are increasing in numbers. The link between hunting and locavorism may have emerged in part from Michael Pollan's (2006) book, the "Omnivore's Dilemma." Some philosophers have argued that eating hunted game is more appropriate from a normative or moral perspective than eating farm-raised animals (Bruckner, 2007). Research in Sweden has shown that non-hunters who consume game meat report higher hunting acceptability ratings than non-hunters; frequency of game meat consumption was also associated with more positive attitudes toward hunting (Ljung et al., 2012). Given the rising demand associated with environmental (e.g., game population control, provision of healthy naturally and locally produced protein) and social (e.g., public engagement with and appreciation of hunting, concerns about farm-raised animal welfare) benefits of game meat consumption, some authors have even argued for the development of a commercial market for venison and other game (Vercauteren et al., 2011). Though this proposition has many potential drawbacks (e.g., privatization of wildlife, potential overexploitation, challenges of changing and enforcing regulations), it could generate additional support for hunting, reinforcing the broad base of support that represents the foundation in the HRR concept map. Similar macro-level shifts in hunting orientations that link hunting and civic responsibility will likely affect individual behaviors and, as a result, HRR across a variety of situational contexts.

Agencies & Institutional Support

Institutions such as state wildlife management agencies ultimately operate and exert influence at all levels of social structure, but their impacts often originate at the macro level. Because state agencies have statutory authority to set hunting regulations, require certification and licensing of individuals, and promote common ideals and hunting ethics (Clark, 2007; McCorquodale, 1997), they affect all hunters and the potential hunting population. Furthermore, these agencies have the capacity to directly influence hunting recruitment, norms, and behaviors through mandatory sportsmen's and sportswomen's education courses. The influence of state agencies can extend well beyond management and logistics, however. In some cases, it may be

possible that these institutions are themselves defining aspects of hunting culture, particularly for the non-hunting public. In surveys of active hunters, however, these same institutions appear to play a small role in hunter identity production (Enck & Brown, 2001). Assumptions that wildlife management agencies and hunters are closely allied may create a contentious environment that alienates stakeholder groups who oppose hunting practices and frustrates active hunters who resent excessive oversight and regulations (e.g. antler restrictions). A perceived emphasis on hunting may also result in non-hunters who are not aware of what the agency does, who believe that the agency's limited perspective is not addressing broader ecological concerns, and who fail to recognize the agency as a legitimate source of information and management authority. The result may be diminished support for HRR and, subsequently, reduced conservation funding. Increased communication between hunters, non-hunters, and agency personnel could help to mitigate this problem (Mangun, Throgmorton, Carver, & Davenport, 2007). Jacobson and colleagues (Jacobson, Decker, & Organ, 2010; Jacobson, Organ, Decker, Batcheller, & Carpenter, 2010) have called for institutional change among wildlife agencies that would broaden their programmatic boundaries by being more inclusive of public interests in wildlife other than and in addition to the traditional interests of hunters and expanding agency activities accordingly, a proposition repeated by other authors as well (Decker, Organ, & Jacobson, 2009; LaRoe, Unger, & Abhat, 2009; Regan, 2010; Rutberg, 2001; Winkler & Warnke, 2012). This would, in effect, broaden agency concerns to directly include non-consumptive recreation activities and increase conservation awareness and support among the non-hunting public.

Wildlife management agencies are not the only institutions affecting HRR. A variety of NGOs also play a critical role. In fact, research shows informal club settings (e.g., local hunting, hiking or shooting clubs, or national groups such as National Wild Turkey Federation and Ducks Unlimited) not only provide opportunities to increase awareness and improve skills, but often foster strong social support (Benson, 2010; Seng et al., 2007). For example, Benson (2003) noted that local hunting clubs can provide new residents or visiting hunters with opportunities to meet others, learn about local places to hunt and hunting traditions, and have fun in a positive, hunting-oriented context. However, Benson also acknowledged that the way most hunting clubs currently operate is insufficient and incapable of building this type of social capital. When HRR goals align, there may be opportunities for agencies to capitalize on this existing network and jointly work to achieve HRR goals. It should be noted, however, that some NGOs may embrace

a commercial HRR perspective centered on membership and marketing that may not translate well for agencies concerned about conservation and the social and ecological benefits of hunting. Studies are needed to explore the benefits or costs of particular potential agency-NGO partnerships. Research suggests that the value of NGOs to HRR has only recently been recognized, leaving substantial room for expansion and improvement of existing programs and collaborations (Byrne, 2009; Valenta, 2006).

3.5. The Complexity of Social Structures

When considering each aspect of social structure outlined above, it is also critical to acknowledge the dynamic relationships that shape the constantly evolving hunting social world. Structural levels do not exist in isolation. They are only considered separately here for illustrative purposes. In many cases, these social structures are interconnected and tightly nested within one another. Therefore, when analyzing the influence of individual, micro, meso, and macro factors on HRR, it is important to remember that:

- **Social structures evolve through multi-level interactions.** Social systems are produced by interactions across multiple levels (Giddens, 1984). For example, anti-hunting sentiment expressed by a few ardent animal rights supporters can catalyze activist movements, attract media attention, and permeate popular culture, generating a negative perception of hunting that discourages individual participation in hunting through a cyclical feedback loop. Similarly, institutional change (i.e., changing regulations) produces changes in individual behavior. This form of active socialization is the hallmark of any social system.
- **Contextual variables influence social habitat.** Although research has revealed general patterns, trends, and processes that apply across diverse situations, HRR is ultimately highly contextualized. In other words, research suggests that many critical context-based variables (place, demographics, etc.) influence social habitat for hunting and subsequent HRR.
- **Constraints to hunting can emerge at multiple levels.** Perceived constraints to hunting are important for understanding and predicting every aspect of the HRR process including initial participation, support for hunting, and dropout behavior. Consequently, most state wildlife agencies place substantial emphasis on ameliorating

or eliminating these barriers. Outdoor recreation research has revealed that constraints to participation can be external to the individual (structural), internal to the individual (intrapersonal), or socio-relational (interpersonal) (Jackson, 2005; Wright & Goodale, 1991). In other words, constraints operate at multiple levels and can be both exacerbated and mitigated by various social structures. Most studies of hunting participation emphasize that personal constraints (e.g., declining interest and satisfaction, lack of leisure time, lack of companions to hunt with) are more likely causes of hunting cessation than resource-related (i.e., structural) constraints (Decker & Brown, 1982; Duda, Bissell, & Young, 1996; Enck, Decker, & Swift, 1993; Wright, Drogin-Rodgers, & Backman, 2001; Zinn, 2003). However, crucial to this analysis, many of these personal constraints have a strong social component linked to higher social structures. For instance, research has not adequately revealed whether a lack of discretionary time is simply an individual shift toward other competing recreation interests or a consequence of a societal-level movement toward two-earner households that transforms domestic responsibilities and reduces leisure opportunities (Duda et al., 1996; Seng et al., 2007). Similarly, high desertion rates of urban-dwelling hunters could be related to unmet expectations (i.e., an intrapersonal reason such as lack of success) or a loss of social reinforcement (i.e., an inter-personal reason such as lack of hunting companions) (Purdy et al., 1989). Constraints to hunting that emerge from and operate on multiple levels are an important area for future inquiry.

4. HUNTER RECRUITMENT & RETENTION TARGETS & ASSOCIATED RESEARCH NEEDS TO INFORM DECISION-MAKING

The current knowledge and important information gaps outlined above can be used to identify target outcomes, objectives, and needs for the HRR efforts from both a research and programmatic standpoint. These outcomes and objectives can be conceptualized using the concept map (Figure 2) depicting a wildlife agency's role in the hunting social system. Considered within the broader context of the hunting social world, the model can help managers and others keenly interested in HRR to better understand: 1) how social structure expressed at multiple levels influences HRR, and (2) what role the agency might play in efforts to address issues at these various levels to enhance HRR. The opportunities, insights and research needs identified below highlight some of the possible goals based on current knowledge of social structures affecting the HRR process. Most of the research has focused on the individual and micro levels; HRR strategies targeting (or responding to) the meso and macro level are comparatively rare. When assessing these needs, it is important to remember that each target outcome cannot be considered in isolation. Every outcome is defined by interactions with the complex hunting social system, and many of these HRR targets are nested within multiple levels of social structure. Consequently, the most effective HRR strategies will likely feature a multi-pronged approach that simultaneously addresses several different elements of the social habitat for hunting.

4.1. At the Individual Level

- ***Acknowledge diverse motivations and emphasize multiple benefits of hunting.***
 - *Insight:* People hunt for many different reasons, and HRR efforts must recognize the diverse motivations and expectations of various constituencies. These may include traditional benefits (e.g., harvesting game, experiencing nature) and newly recognized benefits (e.g., promoting physical health, combatting nature-deficit disorder, engaging in civic or conservation behaviors) that attract participants to the activity.

- *Research Needed:*
 - Investigate how motivations and expectations differ across different social contexts of hunters (e.g., hunters with and without family support for hunting, hunters living in rural vs. urban environments).
 - Understand how motivations of individuals may change over time, affecting both entry into hunting (recruitment) and continuing participation (retention). Understand how motivations are affected by broader social structures (e.g., social networks, communities, race/ethnicity, and society and culture).
 - Explore the relative influence of micro, meso, and macro social structures on an individual's decision to hunt, and determine if certain levels of social structure are more powerful than others.
- ***Understand and manage hunter expectations.***
 - *Insight:* Desertion and cessation, especially for newly recruited hunters, is often driven by dissatisfaction that stems from the failure of the experience to meet expectations. This problem can be mitigated in part by helping new hunters develop a better sense of what a realistic hunting experience entails, which may mean deprogramming them from impressions gained watching hunting shows on television and videos. (Note: This is conjecture for illustrative purposes given the lack of research about media effects on development of expectations for hunting experiences.)
 - *Research Needed:*
 - Identify the characteristics of quality hunting experiences desired by an increasingly diverse population (including potential common denominators) and determine what others can do to manage for these desirable experiences (in whole or in part), possibly by focusing on the hunting process in addition to harvest-based outcomes.
 - Understand the many and different expectations of new and continuing hunters, as well as the source of these expectations. Explore how these

expectations are communicated directly from continuing hunters through primary socialization, including the role of media (e.g., print and electronic media such as hunting-related television programs, video games, and the Internet).

- ***Assess and address cognitions (i.e., norms and attitudes) of diverse hunters.***
 - ***Insight:*** Cognitions (i.e., norms and attitudes) are key antecedents of hunting behavior; thus, an enhanced understanding not simply of their content but also how higher-level social interactions *affect* these individual cognitions will help to frame HRR and communicate about hunting to diverse populations operating in unique social contexts.
 - ***Research Needed:***
 - Understand the social origin of individual cognitions, attitudes, and norms about hunting and explore how these elements are created and how they might be influenced.
 - Explore the relative and combined influence of social-psychological factors (e.g., cognitions, motivations, satisfaction), resource-related considerations (e.g., game populations, hunting access), and institutional/regulatory requirements (e.g., hunter education courses, license costs) in hunting participation decisions.
- ***Identify and address barriers to hunting participation.***
 - ***Insight:*** Individuals experience myriad barriers to hunting participation. These constraints vary by social and environmental context, and they may originate at different levels of social structure. An enhanced understanding of potential barriers will help individuals and wildlife management agencies develop strategies to minimize constraints and sustain or increase hunting participation.
 - ***Research Needed:***
 - Identify the types of constraints that influence hunting participation for individuals in different social and geographical contexts.

- Explore the relative influence of various constraints on hunting participation, with a particular emphasis on barriers that state agencies are capable of manipulating or controlling (e.g., access to hunting lands, hunting regulations, certification requirements).
- ***Facilitate the development of hunters' self-identity.***
 - *Insight:* This goal undoubtedly requires coordinated NGO and agency effort, and activities of both agencies and hunter organizations that aim to facilitate hunter identity development would benefit from recognition and consideration of social structure at multiple levels. Efforts to develop hunter self-identity should be cognizant of the identity-building process and deliberately attempt to create pro-hunting socialization opportunities.
 - *Research Needed:*
 - Understand the relationship between hunter identity and long-term hunting participation.
 - Identify the types of motivations, outcomes, and social support processes (including formal agency programming efforts) that help novice hunters develop an identity as a hunter, particularly among the largely unstudied emerging populations of hunters.
 - Understand how hunter identity is affected by divergent influences and “mismatches” between expectations of one structural level and those of others (e.g., urban resident with ancestral ties to hunting, rural resident with urban/suburban upbringing).
 - Understand how hunter self-identity for individuals in all pathways into hunting is reinforced over time, leading to long-term retention.

4.2. At the Micro Level (Family & Mentors)

- ***Identify core elements of socialization that agency-sponsored and NGO-sponsored programs can supplement or replace.***
 - *Insight:* Research shows that the rural family unit (particularly hunting fathers) has historically been the key agent of socialization in the traditional HRR

pathway. For a growing number of potential hunters, however, family support of this type is minimal or absent. Efforts to target these non-traditional hunters must determine if and how agency or NGO interventions (e.g., education courses, apprenticeship programs) can generate or replace family support for hunting and cultivate interest in hunting for potential hunters from non-hunting families. It will be important to identify potentially effective, and perhaps very different, roles of agencies and/or NGOs in this socialization process; it is possible that agency involvement in some facets of the process would be counter-productive or inappropriate for a government agency (i.e., too intrusive into the social life of individuals and groups) and better served by an NGO.

- *Research Needed:*

- Identify the conditions under which the traditional family socialization model is still functioning (where? for whom?) and identify key changes that are affecting this traditional model.
- Examine the extent to which different perceptions of “hunting” by the individual and the family lead to different recruitment pathways (including different forms of family socialization as well as socialization via alternative paths), and determine the effects of communication and messaging in this socialization process.
- Investigate the extent to which family support is critical to individuals whose beliefs about hunting did not arise from traditional pathways.
- Explore how social support systems affect hunting initiation and continuation of adults from non-hunting families, including the norms and practices that they are recruited to.

- ***Evaluate, refine and re-implement recruitment programs aimed at youth.***

- *Insight:* Most state agencies have implemented HRR programs targeting youth, but results have been mixed and hunter numbers continue to decline. Many scholars and practitioners suggest an emphasis on research-based interventions accompanied by comprehensive evaluations could help to improve success rates and document ineffective approaches. Purposeful integration of a socialization

component (perhaps facilitated by a hunting-related NGO) could also facilitate progression from the trial to the continuation phase in the HRR process.

- Research Needed:
 - Examine the extent to which, and under what conditions, youth from non-hunting families enter the hunting social system.
 - Explore how youth in urban areas develop a positive association with hunting.
 - Evaluate existing youth hunting programs to determine their short-term and long-term efficacy with respect to HRR.
 - Understand if and how apprenticeship-style program content can be altered and adapted to fit the needs of particular socio-cultural contexts.
- ***Identify committed hunters (and hunting-oriented programs) that could serve as models for a diverse range of potential hunters.***
 - Insight: Although active hunters represent one of the most valuable resources for recruiting new hunters and modeling desirable hunting behavior, too few are currently fulfilling this need. Agencies could partner with or support mentoring sponsored by local NGOs to reverse this pattern. Furthermore, emergent types of hunters may require a certain type of mentor (e.g., an individual that he/she can identify with), and existing NGOs may not reach these new targets of recruitment; thus, key spokesmen and women should be identified to promote hunting and pro-hunting social norms in communities from which emerging hunters originate. Assistance may be needed to organize hunters that do not choose to affiliate with traditional hunter organizations, but organizations that acknowledge and account for the needs and interests of emerging types of hunters can greatly contribute to the socialization and social support needs identified earlier.
 - Research Needed:
 - Identify what motivates people to become hunting ambassadors or mentors.
 - Identify skills and attributes that make individuals more effective hunting advocates, ambassadors, mentors, or hunter education course instructors.

- Assess existing pools of hunter education course instructors to determine the extent to which these instructors are willing and able to serve as effective hunting mentors in different socio-cultural contexts (i.e., can they effectively connect with hunters holding interests that are not traditional?)
- Evaluate the current and potential role of television and video hunting celebrities/stars to play the role of a virtual mentor, idol or role model for potential hunters arising from socialization processes that are quite different from the traditional processes that have long been central to HRR. Determine the extent to which this an opportunity or a problem.

4.3. At the Meso Level (Community & Local Landscape)...

- ***Strengthen communication about hunting with non-hunting audiences.***
 - *Insight:* The literature to date has revealed that active hunters are just one component of the complex hunting social world. Associates of hunters and supporters of hunting may have equal or greater influence on long-term HRR. Therefore, it is incumbent upon agencies and NGOs interested in HRR to develop a better understanding of hunting norms and values that are important to these supportive hunting associates. Perhaps because the importance of non-hunting members of the social world of hunting has not been recognized, it is not evident that any significant attention has been given to providing the same kinds of social support for this group (e.g., organizational focus). This may be an important missing component in the social support web at the community level.
 - *Research Needed:*
 - Identify different types of hunting associates and their variable contributions to hunting in different forms (e.g., hunting as recreation, hunting for wildlife management, hunting as a sustainable practice).
 - Evaluate the importance of support from non-hunters to HRR (i.e., is a supportive social world critical and can it be created via social media as well as by traditional face-to-face social relationships?).
 - Understand how support for hunting from non-hunters (and the need for this support) differs across different kinds of settings and determine what

types of positive messages (and delivery mechanisms) related to hunting might resonate with the non-hunting public.

- Explore the extent to which non-hunters (including hunting associates and individuals from non-hunting backgrounds) eventually become hunters and identify factors that influence this transformation.

- ***Connect hunters with both public and private lands.***

- *Insight:* Addressing access to land for hunting in the context of HRR likely will call for a two-pronged effort addressing both private and public land access and use enhancement. Studies indicating that many of the most successful and committed hunters are predominantly private land users and the fact that a majority of wildlife habitat in New York State is private land speaks to the importance of such land for hunting opportunities. Unfortunately, access to private hunting land has become difficult due to posting, parcelization, and reduced proximity of “hunnable” land to population centers. This indicates that agencies should not write-off the future potential value of public land for hunting, which might be suggested by some interpretations of hunting across studies. Instead, mechanisms to expand opportunities on both public and private land by matching people and land may be in order. For example, encouraging relationship building with landowners to gain access to private land may be part of the hunting socialization experience (e.g., landowners may be provided with incentives by agencies or NGOs to open their land on a limited basis to hunters). The development of “friends groups” (social networks with a functional focus on a land area) commonly associated with individual national, state, or local parks and protected areas may be a way to influence habitat quality of public hunting areas and the hunting experience on such areas (e.g., norms of conduct, self-policing, collaboration with groups to report illegal or unsafe behavior), fostering a conservation orientation among public land users that mimics the stewardship ethic documented in private land hunters. It is also possible that access to some public lands could be regulated to enhance the quality of the hunting experience.
- *Research Needed:*

- Identify what agencies can do to enhance the hunting experience on public lands and evaluate the extent to which private vs. public land access matters in terms of HRR.
 - Understand the extent to which public and private lands (and posting and parcelization of land) contribute to sense of place for some hunters and the degree of place attachment that may develop as a result. Understand whether and how this attachment subsequently affects hunting behavior.
 - Identify the conditions under which private landowners are willing to open their land to other hunters and identify incentives that are in place to encourage this.
 - Determine the conditions under which leasing of private hunting land facilitates or constrains HRR.
- ***Optimize access to and enjoyment of hunting on public lands.***
 - *Insight:* Reports suggest the availability of quality hunting opportunities on public lands is inadequate and, to some extent, this decline may be linked to observed decreases in hunting participation. However, not a great deal is known about hunting experience quality or expectations on public hunting lands. It is clear that hunters prefer private land hunting over public land hunting, but public land will almost certainly be a piece in the HRR puzzle going forward. Thus, perceptions of those who do not use public lands and experiences of those who do need to be identified. Ways to improve the image or reputation of public land for hunting need to be investigated as well. For example, anecdotal reports of crowding and limited hunting success may drive many hunters away from public land. What leads to these perceptions (e.g., quality of the habitat found on public land, hunter inter-group encounters, or perceptions of safety)? How might agencies help to cultivate a more positive relationship between hunters and public land?
 - *Research Needed:*
 - Identify perceived characteristics of public lands and public land users that attract or repel hunters.

- Examine the feasibility of shifting land/wildlife management or access procedures to reduce and/or mitigate some of these problems.
- Investigate the link between habitat management on public lands (including the individuals, groups or agencies responsible for management) and its influence on perception of land quality and public land use.

4.4. At the Macro Level (Society)...

- ***Identify changing demographic patterns, understand how they affect hunting participation, and develop strategies that account for these changes.***
 - *Insight:* As the U.S. population changes, those interested in HRR need to understand new or emerging hunting audiences (e.g., racial/ethnic minorities, urbanites) and determine their potential to participate in (either actively or passively) the hunting social world. Recruitment from some segments of the New York State (and U.S.) population has been very low to date; thus, if these segments are to be approached as populations from which more hunters might be drawn, a great deal needs to be learned about the barriers and facilitators for their HRR. Some data indicate that transferability of insight about traditional hunters to these emerging populations could be problematic and should not be used as assumptions for program development aimed at improving HRR for them. Understanding how to attract more people with interest in hunting from currently under-represented population segments may be a key recruitment strategy, but little research exists in this area to support design of HRR approaches for these demographic groups.
 - *Research Needed:*
 - Identify social processes that guide and facilitate new and emerging pathways into the hunting social world and evaluate how traditional hunting practices will evolve in response to shifting social norms. [Note: Many of these research needs span structural levels by exploring broader societal influences on individual thoughts and actions.]

- Examine how diverse urban populations perceive and value hunting. Identify types of activities and programs that provide a gateway into hunting for various racial/ethnic minorities.
 - Explore how support for hunting can be cultivated among seasonal residents and rural transplants.
 - Characterize the size of the pool of females with potential interest in hunting and identify major barriers to engaging female hunters.
 - Understand how responses to shifting demographic patterns may affect traditional HRR programs and practices.
- ***Influence public perceptions about what hunting is and what hunting can accomplish.***
 - *Insight:* Curbing and reversing any erosion of public support for hunting is a key component of any HRR strategy. The HRR concept map depicted earlier (Figure 2) recognized the importance of broad social support for hunting. Basic understanding of sociology emphasizes the importance of social support for sub-groups within a society and reinforces the importance of linkages between the sub-group and society in which it exists. With this in mind, addressing the long-standing negative image of hunting in popular culture and the media is crucial. Exposing and confronting common myths and misconceptions may require considerable effort. A prerequisite to such effort could begin by assessing reasons for and strength of overall support for hunting among segments of the general population (e.g., rural versus urban, different, racial/ethnic groups, etc.) and highlighting a broader range of ecosystem services and the environmental, social, and economic benefits that hunting produces.
 - *Research Needed:*
 - Understand the ways in which new and emerging hunting audiences view hunting and value various outcomes of hunting.
 - Document media portrayals of hunting and characterize the influence of various media portrayals of hunting on public perceptions of the activity and overall HRR.

- Understand the ways in which media can enhance the image of hunting or help with recruitment by constructing and reinforcing realistic expectations.
 - Identify the most effective methods and communication strategies for transmitting pro-hunting messages to various target audiences. How can agencies and other organizations work to increase community awareness of hunting and hunting-related benefits? Who should communicate these messages?
- ***Encourage participants to consider hunting as conservation-oriented recreation.***
 - *Insight:* Studies have consistently shown that hunters seek and experience multiple satisfactions from hunting, yet the activity is often portrayed narrowly as predominantly focused on the taking of a game animal. Many potential hunters or hunting supporters are discouraged by this portrayal, which seems to contradict the general conservation ethic in which modern hunting is grounded. Those interested in HRR should work to revive and update the conservation-related aspects of hunting that correspond with an expanding societal conservation ethic.
 - *Research Needed:*
 - Identify the beliefs, attitudes, and behaviors hunters associate with a conservation ethic and evaluate the extent to which this ethic reflects broader societal views. What are the origins of this conservation ethic?
 - Explore what a conservation ethic might look like for new and emerging types of hunters (realizing there's a diversity of them).
 - Evaluate how non-hunters perceive hunting and the hunting ethic. Evaluate how the promotion of hunting as conservation-oriented recreation might resonate with the general public.
 - Examine the extent to which an HRR focus on non-harvest aspects and benefits of hunting (i.e., time outdoors in nature, physical activity and health, pro-environmental behavior) might make hunting more appealing to a broader audience.

- ***Promote hunting as a civic act.***
 - *Insight:* Evidence suggests that a growing emphasis on sustainable practices in modern society inspires people to engage in activities that support ecosystem health and community vitality. For many, environmentally-responsible behaviors (e.g., reducing carbon footprints, eating locally grown foods, managing risks and impacts associated with overabundant wildlife) have become a civic responsibility. Given the need for management of ungulates, especially white-tailed deer, in many parts of the U.S., those interested in HRR could emphasize the need for hunting as a civic activity commensurate with agency programs (e.g., DMAP, DMFA) and work to develop hunting recruitment materials that resonate with an increasingly urban, sustainability-minded populace. This messaging is also appropriate for maintaining broad social support of hunting among the non-hunting public.
 - *Research Needed:*
 - Evaluate the extent to which increasing population growth in the rural-urban fringe (an area with high deer populations, increasing encounters with predators, and generally high potential for human-wildlife interactions) creates a new group of stakeholders (i.e., “civic purpose” hunters) sympathetic to the need to manage wildlife populations.
 - Identify the size and scope of the potentially expanding base of “civic purpose” hunters and identify boundaries (social and geographical) and barriers that might affect their entry into the hunting social world.
 - Evaluate how the movement to local and organic food sources affects acceptance of, enthusiasm for, and involvement in hunting among heretofore under-represented groups (e.g., young, highly educated, upper class urbanites).
 - Examine how HRR efforts and management geared towards new and emerging types of hunters complements or conflicts with ongoing efforts aimed at more traditional hunting populations.

- ***Assess which organizations and groups (including state agencies) can foster interest in hunting and how that interest can be cultivated.***
 - *Insight:* Institutional influences operating at multiple levels ranging from the state (e.g., state wildlife agencies) to informal (peer groups) and formal (e.g., schools, churches, scout groups) community support networks can have substantial effects on hunting awareness and participation. Improved knowledge of how these organizations and groups influence hunting behavior and an enhanced understanding of their present and potential roles in HRR would inform further intervention efforts. Agency partnerships with NGOs and other community organizations could therefore become invaluable components of HRR.
 - *Research Needed:*
 - Identify and examine the direct and indirect facilitative roles of various government agencies (state and federal) in HRR.
 - Evaluate the effects of existing agency programs and initiatives on HRR and identify ways in which they could be improved to address the needs and expectations of a diversifying hunting population.
 - Identify roles that NGOs and other organizations (e.g., sportsmen's clubs) currently play in recruiting and retaining new hunters, and determine what roles they could or should play.
 - As the consideration of what hunting means in different contexts continues to expand, consider a broader range of relevant NGOs (e.g., environmental groups, food groups, etc.) that may play a role.
 - Assess the ways in which agencies currently communicate hunting-related information and identify core elements of these messages that are effective and ineffective in terms of HRR.

5. CONCLUSIONS AND RECOMMENDATIONS

Declining hunting participation (both nationally and within New York) is a major concern for state wildlife management agencies who rely heavily on public involvement in hunting to fulfill their mandate to manage for positive ecological and social outcomes. A strategic, research-based approach to hunter recruitment and retention may help to reverse this trend. In a collaborative effort to identify HRR priorities, HDRU and agency staff reached the conclusion that HRR concepts and programs should expand to incorporate a broader view of hunters and hunting, effectively recognizing that HRR is a complex, multi-level social process and not an isolated end-state.

This perspective suggests that active hunters represent only one component of the hunting social world. The HRR process could therefore be re-conceptualized to include a parallel pathway that encompasses hunting associates, or individuals who identify with and support hunting-related activities (Figure 5). These non-hunters who engage in hunting-support behaviors outnumber active hunters and likely play a critical role in HRR (Stedman & Decker, 1993; Stedman, Decker, & Siemer, 1993). As Figure 5 indicates, individuals may transition from being active hunters to hunting associates (and vice versa), highlighting links between different stages in the complex social process. This HRR process operates within dynamic, hierarchical social structures that vary across time and place. A comprehensive understanding and robust approach is the key to identifying and influencing these structures.

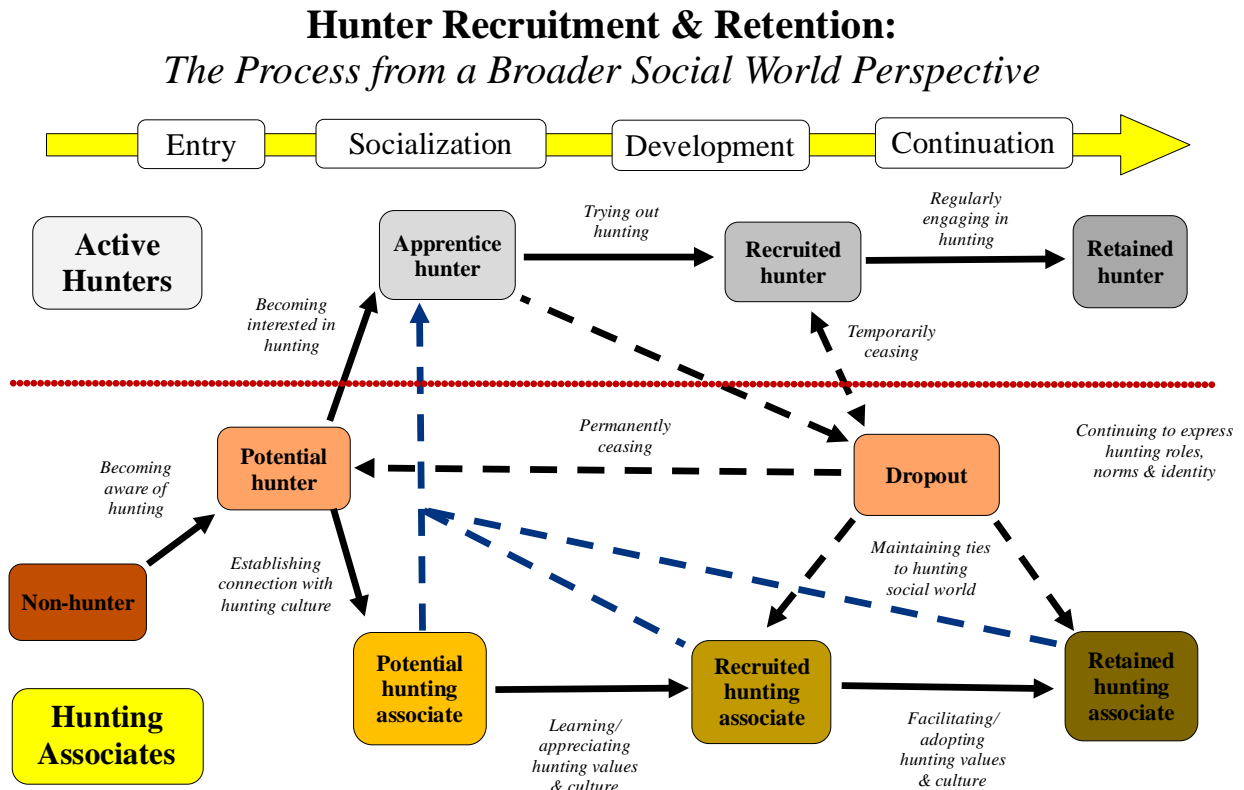


Figure 5. The process of hunter recruitment and retention from a broader social world perspective acknowledging the critical role of hunting associates.

Social change is a major challenge to HRR endeavors, but with an inclusively framed philosophy and policy reflected in an adaptive approach to HRR social transitions also represent opportunities. It is therefore important to understand social patterns of changes at multiple levels, which we have labeled as individual, micro, meso, and macro, and to predict the impacts of these changes on the social processes and social structures that influence an individual's hunting participation. This document synthesized existing research about factors operating at each of these structural levels to highlight critical HRR targets, outcomes, and remaining research needs. Innovative strategies need to be devised to help agencies and researchers fill existing information gaps and create programs and projects that can achieve desired goals for HRR. The synthesis suggests that HRR could be enhanced through two broad approaches:

- ***Building the pool of hunters (the conventional approach).*** Most HRR models have focused directly on increasing actual hunter numbers by targeting specific populations (e.g., women, youth). Considering the ultimate goal of HRR efforts (i.e., more hunters),

this approach is certainly logical. As the number of traditional hunters (i.e., white males from rural areas) declines and a new wave of individuals (e.g., media-born hunters, civic purpose hunters) enters the pool of hunters, efforts to understand the unique process that drives HRR within each distinct group – and potential convergence and/or conflict between the groups - will become even more critical. Enhanced knowledge of the processes associated with each group of hunters could help to sustain the flow of participants from the traditional population and create a more efficient mechanism for attracting new types of recruits. However, decades of research has shown that, operating alone, the strategy of only targeting active hunters often yields unsatisfactory results.

- ***Building and enhancing the social habitat for hunting.*** The social world view of the hunting social system reveals that active hunters are just one (albeit critical) piece in the HRR framework. The future of participation in hunting ultimately depends on broad-based support influenced by complex interactions at the micro, meso, and macro levels of social structure. Sustaining HRR into the future requires understanding and perhaps influencing the beliefs, attitudes, and norms that shape behaviors of a “new face” of hunters as well as the non-hunting public. If a viable social habitat is established and hunting is redefined in the context of contemporary American culture (instead of historical or anachronistic terms), then hunter numbers may again begin to rise. The hunting system, like other systems, is *dynamic* and changing in response to shifting ecological and social conditions. One question left unanswered is how many active hunters are needed for conservation and civic purposes and how these emerging types of hunters can be accommodated given available opportunities (e.g., land access).

Examination of the HRR concept map (Figure 2) demonstrates that a single agency is unlikely to address these challenges simultaneously. In fact, it might be inappropriate to attempt to do so, given limitations of agency authority, resources, and expertise. Instead, a coordinated effort involving multiple partners is likely necessary to accomplish the collective objective of improving the social habitat for hunting while facilitating the social processes that precipitate hunter involvement. In conclusion, a comprehensive approach to HRR that accounts for the dynamic interactions of individual behavioral processes and concurrent influences of hierarchical social structures is needed to sustain hunting participation for generations to come.

5.1. Proposed Framework for Conceptualizing HRR: A Typology of Hunters

Overall, the literature reviewed points to the need to avoid a one-size-fits-all approach to HRR. Instead, enhancing HRR is going to require some targeting of specific population segments that represent an increasingly diverse array of potential hunters. Focusing only on traditional hunters—rural white, predominantly male hunters whose pathway into hunting is through family—is a very limiting approach and, at best, is likely to be a route for reducing the rate of decline but not the overall recession in hunting participation witnessed over the last several decades. Furthermore, an exclusive focus on traditional hunters is unlikely to maintain a critical threshold of existing hunters needed to manage some game species and maintain hunting as a legitimate and important part of American culture. Given what we have learned, a more promising approach would be to consider a typology of hunters that might be described as follows:

- ***Rural residents:*** This category includes hunters who experience familial socialization into hunting and extensive youth apprenticeship that stems from growing up and living in rural areas. These hunters are current rural residents who have been for all (or most of) their lives, and have therefore consistently been immersed in and surrounded by traditional rural hunting culture and socialization mechanisms. This group epitomizes the traditional hunter.
- ***Rural transplants:*** This category includes hunters who, like the rural resident hunters described above, experience familial socialization into hunting and extensive youth apprenticeship that stems from growing up and living for an extended period of time in rural areas (or having strong familial ties to and experience in rural areas). However, unlike rural residents, translocated hunters no longer reside in rural areas with strong hunting heritage and tradition. Rural transplants are often urban residents with rural hunting roots. Given the recent urbanization trend in the U.S., this represents a relatively large group.
- ***Media-informed participants:*** This category includes hunters whose interest in the activity is primarily media borne (e.g., TV, videos). Social media represent the primary networks of support for these hunters, and many experience minimal first-hand

apprenticeship opportunities. Family support among this group is often replaced by social norms derived from electronic networks and media portrayals of hunting.

- ***Civic purpose conservationists:*** This category of hunters is motivated by a desire to achieve civic outcomes that benefit communities and the natural environment (i.e., reduction of negative impacts from ungulates on people and ecosystems). These hunters may be motivated by conservation-oriented objectives that are more socially palatable in urban, suburban, or exurban environments, similar to the peri-urban hunters below. Their actions typically reflect a commitment to environmental stewardship and conservation.
- ***Locavores:*** This category of hunters is motivated by lifestyle ethics and the prospects of personal procurement of “natural” food. Animal welfare (e.g., strong opposition to practices associated with farm-raised meat consumption) and sustainability (e.g., subsistence lifestyles, low carbon footprint) may be primary concerns of locavore hunters. Conservation motivations appeal to this group, but they may be manifested in different ways than those for more traditional rural hunters.
- ***Peri-urban residents:*** Much of the recent urban growth has been through expanded footprints of urban centers into formerly rural areas and/or migration of people to these urban fringe areas. Consequently, there is a growing population of people that is newly in contact with rural areas and wildlife. Although these people may be interested in hunting for reasons consistent with the civic purpose and locavore types above, they may also be motivated simply by their contact with nature and wildlife; hence, peri-urban residents could pursue hunting more in line with traditional mechanisms that characterize rural residents and transplants.

We do not expect these to be strictly discrete categories, and it is not currently clear how representation in each of these hunting subgroups will vary over time and by place. However, this categorization reveals primary tendencies that point to routes for recruitment and influences on retention that may be useful to guide HRR efforts as the population of potential hunters evolves. Program design and associated research needs could be developed for each of these target populations, recognizing that overlap exists and dynamic shifts among groups is possible for any given individual. Although the existence of overlaps presents a problem from the standpoint of typology conventions, this overlap should have little practical significance in terms

of the typology's utility for conceptualizing research needs and program foci for HRR improvement in New York and throughout the U.S. If the insights and research needs identified earlier in the report can be associated with these distinct types of hunters, this framework could provide concrete direction for future HRR research and subsequent targeted HRR initiatives.

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