Routledge
Taylor & Francis Group

Human Dimensions of Wildlife

An International Journal

ISSN: 1087-1209 (Print) 1533-158X (Online) Journal homepage: http://www.tandfonline.com/loi/uhdw20

Household Dynamics of Wildlife Value Orientations

Kalysha E. Clark, Katie Cupp, Crystal L. Phelps, M. Nils Peterson, Kathryn T. Stevenson & Christopher Serenari

To cite this article: Kalysha E. Clark, Katie Cupp, Crystal L. Phelps, M. Nils Peterson, Kathryn T. Stevenson & Christopher Serenari (2017) Household Dynamics of Wildlife Value Orientations, Human Dimensions of Wildlife, 22:5, 483-491, DOI: 10.1080/10871209.2017.1345022

To link to this article: http://dx.doi.org/10.1080/10871209.2017.1345022

HUMAN DIMENSIONS OF WILDLIFE
2017, VOL. 22, NO. 5, 483–491
https://doi.org/10.1080/10871209.2017.1345022

Routledge
Taylor & Francis Group

Household Dynamics of Wildlife Value Orientations

Kalysha E. Clark[a], Katie Cupp[b], Crystal L. Phelps[c], M. Nils Peterson[a], Kathryn T. Stevenson[a], and Christopher Serenari[d]

[a]College of Natural Resources, North Carolina State University, Raleigh, North Carolina, USA; [b]College of Sciences, North Carolina State University, Raleigh, North Carolina, USA; [c]College of Education, North Carolina State University, Raleigh, North Carolina, USA; [d]North Carolina Wildlife Resources Commission, Raleigh, North Carolina, USA

ABSTRACT

Wildlife value orientations (WVOs) shape attitudes and behavior toward wildlife. Although demographic correlates of WVOs are well established, these relationships are largely unknown among children and within family units. The only previous study addressing these topics used fathers' perceptions as proxies for family member WVOs. We surveyed North Carolina households (n = 136) to test hypotheses regarding whether individuals can assess household WVOs and what variables shape WVOs within households. Fathers and mothers accurately assessed WVOs of their children. Membership in a household was the most important predictor of an individual's WVOs (accounting for 37% [ρ = .37] of the variance predicted by the model). Younger age, being female, and lack of participation in hunting were associated with more protectionist WVOs. These results provide the first household level support for divergence between generations from utilitarian toward protectionist WVOs. Our results suggest that household unit may be a critical element to consider in WVO research.

KEYWORDS

Children; education; families; household; protectionist; utilitarian; wildlife value orientation

Introduction

Wildlife value orientations (WVOs) provide a useful construct for understanding and managing biodiversity conservation conflict and stakeholder expectations. Value orientations are an "expression of basic values and are revealed through the pattern and direction of basic beliefs held by an individual" (Manfredo, Teel, & Bright, 2003, p. 289). The most recent approach to categorizing WVOs posits a continuum between dominionistic (i.e., mastery, control, dominance over wildlife) and mutualistic views (i.e., shared rights, strong affiliation with wildlife; Dayer, Stinchfield, & Manfredo, 2007; Manfredo, 2008). We focus on the older continuum between utilitarian and protectionist WVOs to ensure direct comparability with the only other study exploring household level WVOs (Zinn, Manfredo, & Barro, 2002). In this framework, utilitarian orientations reflect support for participating in use-based activities (e.g., hunting) and managing wildlife to benefit humans, and protectionist orientations reflect support for protection of wildlife and a desire for equitable relationships between humans and wildlife (Vaske, Jacobs, & Sijtsma, 2011). WVOs

CONTACT Kalysha E. Clark keclark@ncsu.edu Fisheries, Wildlife, and Conservation Biology Program, North Carolina State University, 110 Brooks Avenue, Raleigh, NC 27607, USA.

can influence preferences for wildlife management and policy (Serenari, Peterson, Gale, & Fahlke, 2015; Vaske & Donnelly, 1999), and an understanding of these value orientations can also help managers prevent negative human–wildlife interactions (Martín-López, Montes, & Benayas, 2007; Vaske & Needham, 2007).

Wildlife value orientations (WVOs) may vary over time, between sexes (e.g., male, female), and among cultures (Manfredo, 2008). Support for management of wildlife to benefit humans (i.e., utilitarian WVOs) has declined over the last few decades (Dunlap & Van Liere, 1978; Inglehart, 1990; Manfredo et al., 2003), but demographic correlates of WVOs have remained stable. Older individuals were more likely to hold utilitarian WVOs than younger individuals in locations including Colorado (Fulton, Manfredo, & Lipscomb, 1996; Manfredo & Zinn, 1996), the Netherlands (Vaske et al., 2011), Germany, and Japan (Kellert, 1993). Similarly, males have more utilitarian WVOs than females across cultures (Gamborg & Jensen, 2016b; Miller & McGee, 2000; Vaske et al., 2011). These differences express themselves in dissimilar ways. For example, protectionist WVOs tend to be associated with people with higher education and also women. Women are less likely than men to support killing wildlife that pose perceived risks to human safety (Manfredo, Teel, & Henry, 2009; Zinn & Pierce, 2002). Utilitarian WVOs tend to be associated with a rural upbringing and residency, limited residential mobility (i.e., not moving from place to place), and hunting participation (Gamborg & Jensen, 2016a; Manfredo et al., 2003, 2009; Manfredo & Zinn, 1996; Vaske et al., 2011).

Despite parents, or other primary caregivers, being the most important source of value information for children (Knafo & Schwartz, 2004; Kohn, Slomczynski, & Schoenbach, 1986; Vollerbergh, Iedema, & Raaijmakers, 2001), almost no research has explored how WVOs function at the household level. Zinn et al. (2002) conducted the only study that we are aware of evaluating how WVOs vary within a household. They used fathers' estimates of other household members' WVOs as proxies for actual WVOs and noted a consistent pattern of perceived sex differences in WVOs. Male respondent beliefs about family member WVOs suggested higher alignment among fathers and oldest sons than among fathers and their mothers, spouses, and oldest daughters. Male respondents perceived the beliefs of their oldest daughters as least similar to their own (Zinn et al., 2002). These findings based on paternal estimates of family member WVOs have face validity given an aforementioned sex-related relationships with WVOs and given that male children place higher priority on game species (Shapiro et al., 2016), but would be more rigorous if tested using actual data on household member WVOs.

We build on Zinn et al.'s (2002) work identifying the critical household dynamics of WVOs with a study of household level WVOs in North Carolina using both self-reporting of WVOs and estimation of perceived WVOs for other household members among both parents and children. In addition to evaluating the degree that parent perceptions of the WVOs in their households accurately reflect actual (self-reported) WVOs, we tested five hypotheses:

H_1: Household unit (membership in a family unit residing in the same home) will predict WVOs.

H_2: Being female will be positively related to protectionist WVOs.

H_3: Children will have more protectionist WVOs than their parents.

H_4: Urban upbringing will be positively related to protectionist WVOs.

H_5: Hunting participation will be positively related to utilitarian WVOs.

Methods

Questionnaire design

We developed two questionnaires, one for parents and one for children. The questionnaires were nearly identical, except for a question on the parent questionnaire assessing perceived WVOs of other members of the household, and differences relating to wording of questions about education. To facilitate comparisons, we measured WVOs using the same scale used in the only previous study measuring household WVOs (Zinn et al., 2002). We asked participants to indicate their level of agreement with the following statements: (a) "wildlife populations should be used for human benefit," (b) "wild animals should have rights similar to the rights of people," and (c) "hunting is a positive and humane activity." Each statement offered an 11-point scale response ranging from −5 "strongly disagree" to +5 "strongly agree" with a midpoint of 0 "neither agree nor disagree." We also asked adult participants to indicate how they believed others in their household would respond to the same three statements. On both versions of the questionnaire, we included questions asking respondents to report their age, sex, hunting participation, years at current residence, and whether they had ever lived on a farm, ranch, or in a rural area before age 18.

Sampling

We used convenience sampling to identify households. We requested direct referrals of households from students in the North Carolina State University (NCSU) Fisheries, Wildlife, and Conservation Biology program. Households were included if they met the selection criteria and consented to participate in the study. Selection criteria included residing in North Carolina and being a household unit (defined as at least one adult parent or guardian sharing a home with at least one child 18 years of age or younger). Although convenience sampling facilitated engagement with entire family units, it limited the study by preventing direct inference to a larger population.

We administered paper questionnaires to individuals (n = 467) between February 24 and April 12, 2016. Most data were collected in person (n = 391) in the homes of participating families, although some were collected using telephone calls (n = 65) or email (n = 8). To check for mode effect, we compared WVOs between in person and telephone (using independent samples t-tests) and did not detect statistically significant differences. We collected data from both parents/guardians if they shared the home using the parent questionnaire, and also collected data from the two oldest children (18 years old or younger) in the household if more than one child lived in the home using the child questionnaire. The final sample included 123 households, which consisted of 220 children and 244 parents.

Analysis

We coded answers to each scale question where −5 = 1 and +5 = 11 for the two utilitarian statements and where +5 = 1 and −5 = 11 for the protectionist statement. We summed scores

from the three 11-point responses, with final scores ranging from 3 to 33, where a score of 3 represents the most protectionist WVO and 33 represents the most utilitarian WVO. The WVO scale reliability was acceptable for adults (α = .71) and children (α = .66), particularly given that the scale had only three items (Gliem & Gliem, 2003). We tested the efficacy of using parental guesses to understand household level WVOs using a two-step process. First, we calculated the difference between self-reported WVOs of an individual and the WVOs that other household members guessed that individual would have. The second value was generated by asking the parent or parents to guess how their children and partner would answer the same three WVO questions. Second, we calculated 95% confidence intervals for that difference. Thus, 95% confidence intervals overlapping zero failed to detect differences between self-reported WVOs and WVOs guessed by adults in the family, and 95% confidence intervals more centered on zero reflect higher levels of accuracy in guessing WVOs. Within the confidence intervals, negative values reflect instances where parents perceived family members as more protectionist than they actually were, and positive values reflect instances where parents perceived family members as were more utilitarian than they actually were. We used linear regression predicting WVOs with age, sex, rural upbringing, hunting participation, and percent of life lived in North Carolina as independent variables, and household unit (a unique identifier given to each family unit) as a random effect variable to test hypotheses related to demographic variables and household effects. The random effect for household captures the likelihood that members in the same household unit may have similar WVOs.

Results

Adult ages ranged from 26 to 65 (M = 44.45, SD = 8.01, n = 245), and children ages ranged from 4 to 18 (M = 12.47, SD = 3.57, n = 220). Almost half (46%) of the children and just over half of the parents (52%) were female. The average number of children per household was two (M = 2.12, SD = 0.87). Factor analysis confirmed the scale was unidimensional for adults (Factor 1 eigenvalue = 1.26; all other factors had eigenvalues less than 0.21) and children (Factor 1 eigenvalue = 1.06; all other factors had eigenvalues less than 0.24). The mean WVO was 19.81 (SD = 7.60), with fathers being the most utilitarian (M = 23.70, SD = 6.30), followed by mothers (M = 19.40, SD = 7.40) and sons (M = 19.30, SD = 7.00) who shared nearly identical scores, and finally daughters (M = 16.30, SD = 7.80).

We found support for Hypothesis 1 that household unit would predict WVOs. The random effect variable for household unit predicted more than one-third of the variance explained by our WVO model (ρ = .37, Table 1), suggesting that WVOs are shared at the household level. Our findings also support Hypotheses 2 and 3, because age was positively related to utilitarian WVOs with female children more protectionist than female parents (M_1 = 16.30 SD = 7.80 vs. M_2 = 19.40, SD = 7.40), and male children more protectionist than male parents (M_1 = 19.30, SD = 7.00 vs. M_2 = 23.70, SD = 6.30; Table 1). The sex effect was second in importance to hunting participation, which was also positively related to utilitarian WVOs, lending support for Hypothesis 5 (Table 1). Our findings did not support Hypothesis 4, as we did not find a statistically significant relationship between WVOs and rural upbringing (Table 1). Although this relationship was not significant, its directionality met expectations established by previous studies (Manfredo et al., 2003; Vaske et al., 2011).

Table 1. Linear regression predicting WVOs based on sex, age, rural upbringing, percent of life lived in North Carolina, hunting participation, and household membership.

Variable	*B*	*β*	*p*
Sex [a]	−1.883	−.125	.001
Age[b]	0.113	.257	<.001
Rural upbringing[c]	1.586	.080	.062
Percent of life in NC	1.738	.066	.161
Hunt[d]	−4.183	−.252	<.001
R^2	.253		
Rho[e]	.362		

Notes:
[a]Coded 1 = male, 2 = female
[b]Coded 1 = child, 2 = parent
[c]Calculated by dividing number of years lived on a farm, ranch or rural area outside of a town before age 18 by age.
[d]Coded 1 = does hunt, 2 = does not hunt
[e]Random effect is significant (non-zero), and rho is the proportion of residual variance explained by the household unit effect.

Table 2. Percent of individuals who accurately guessed WVOs for family members within five and two point margins on either side of their own self-reported WVO.

	N	Guessed within five- point margin (%)	Guessed with two- point margin (%)
Mother's perception of father's WVO	107	72	44
Mother's perception of daughter's WVO	68	66	41
Father's perception of mother's WVO	108	67	40
Father's perception of son's WVO	80	63	38
Mother's perception of son's WVO	83	57	28
Father's perception of daughter's WVO	68	56	29

We did not detect differences between self-reported WVOs and those guessed by family members. The 95% confidence intervals for differences between self-reported WVOs and those perceived by family members all overlapped with zero: mother for father (−0.35, 1.96), mother for son (−2.13, 1.03), mother for daughter (−1.22, 2.63), father for mother (−1.37, 0.89), father for daughter (−2.09, 1.86), father for son (−2.37, 0.60). These intervals represent the lower and upper bounds, respectively, in which the true mean difference between self-reported and perceived WVOs lie, 95% of the time. Some patterns emerged with males tending to err on the side of assuming females were more protectionist than they actually were, and females tending to err on the side of assuming males were more utilitarian than they actually were. Mothers tended to be better at guessing WVOs of family members than did the fathers (Table 2).

Discussion

Our results highlight the importance of household units in human dimensions of wildlife research by providing preliminary evidence that they predict WVOs. Our findings attend to calls by scholars who previously identified potential household and family impacts on early development of WVOs and environmental values (e.g., Hermann, Voß, & Menzel, 2013; Zinn et al., 2002). Scholars have advocated for expanding value orientations research from individual foci to larger social units including households (Peterson, Hull, Mertig, & Liu, 2008), communities (Igota & Suzuki, 2008; Jackson & Wangchuk, 2004), and broader social and political structures (Gill, 2000; Manfredo & Dayer, 2004; Serenari, Peterson, & Clark, 2015).

Future research could attempt to link household WVOs to variables traditionally related to individual WVOs including pro-environmental behaviors (Swami, Chamorro-Premuzic, Snelgar, & Furnham, 2011), wildlife-related recreation activities (Fulton et al., 1996), and risk perception of wildlife (Siemer, Hart, Decker, & Shanahan, 2009).

The differences in WVOs between parents and children reflect a difference between generations in how individuals view wildlife. Previous research has highlighted a shift in WVOs away from utilitarianism and toward protectionism or mutualism (Inglehart, 1990; Manfredo & Zinn, 1996), typically identifying the shift by including age as a covariate in models and finding older respondents are the most utilitarian (Manfredo et al., 2003; Vaske et al., 2011). Our results suggest interpretations of WVO shifts focused on generational change because, within households, there were strong generational differences. Without time series data, however, our findings cannot rule out equally strong effects from aging itself. Inglehart (1990) noted that people may become more utilitarian in their value orientations as they age. Rather, our results provide preliminary evidence for a generational effect within households.

Although estimations of WVOs among family members did not differ significantly from self-report measures, our detection of systematic biases in how WVOs are estimated suggests using caution in relying on how family members guess WVOs of others. If estimation of family member WVOs is needed, however, mothers seem to be the best to ask for accurate assessment of family WVOs. Our findings suggest that systematic biases exist in how individuals guess WVOs of family members, where men view women as more protectionist than they actually are and women view men as more utilitarian than they actually are. These biases may be explained by descriptive norms emerging from easily observed gendered activities related to wildlife. Descriptive norms refer to assumptions about what is acceptable behavior based on what is observed (Cialdini, Kallgren, & Reno, 1991). Notable differences in how men and women participate in wildlife-related activities that may contribute to descriptive norms include a male bias in hunting participation (U.S. Department of the Interior, U.S. Fish and Wildlife Service and U.S. Department of Commerce, Bureau of the Census, 2011), female bias in animal protection movements (Munro, 2001), and females being more attached than men to companion animals (Kellert & Berry, 1987). Similarly, in many western societies, females are taught to hold a stronger "ethic of care" (Zelezny, Chua, & Aldrich, 2000), to be more compassionate and nurturing, and participate in caregiving, whereas males are taught to be more competitive and independent (Gilligan, 1982; Zelezny et al., 2000). These varying socialization experiences may also contribute to descriptive norms, suggesting that males should be more utilitarian than women. Future research including assessments of descriptive norms could test these explanations for bias in perceptions of WVOs among family members.

Future research may overcome three important limitations of this study. First, probability sampling is needed to determine the degree that patterns identified here and by Zinn et al. (2002) apply among representative samples of the general public. Second, larger sample sizes may find support for relationships not detected in this study. This seems most likely in the case of rural upbringing predicting utilitarian WVOs, given that relationship existed in this study, but did not meet the .05 alpha statistical cutoff, and has been detected in previous research on WVOs (Vaske et al., 2011). Third, future studies may consider transitioning from the Zinn et al. (2002) three-item scale for household level WVOs used in this study to one of the longer (e.g., 19-item) scales used in more recent research (Gamborg & Jensen, 2016b; Vaske et al., 2011).

Acknowledgments

We thank anonymous reviewers and our Associate Editor for insights on improving the article and for their helpful comments on previous drafts. We would also like to thank the 2016 Human Dimensions of Wildlife class at North Carolina State University for their assistance with data collection, and the families who participated in this study.

References

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory on normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology*, *24*, 201–234. doi:10.1016/S0065-2601(08)60330-5

Dayer, A. A., Stinchfield, H. M., & Manfredo, M. J. (2007). Stories about wildlife: Developing an instrument for identifying wildlife value orientations cross-culturally. *Human Dimensions of Wildlife*, *12*, 307–315. doi:10.1080/10871200701555410

Dunlap, R. E., & Van Liere, K. D. (1978). The new environmental paradigm. *Journal of Environmental Education*, *9* (4), 10–19. doi:10.1080/00958964.1978.10801875

Fulton, D. C., Manfredo, M. J., & Lipscomb, J. (1996). Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife*, *1* (2), 24–47. doi:10.1080/10871209609359060

Gamborg, C., & Jensen, F. S. (2016a). Wildlife value orientations among hunters, landowners, and the general public: A Danish comparative quantitative study. *Human Dimensions of Wildlife*, *21*, 328–344. doi:10.1080/10871209.2016.1157906

Gamborg, C., & Jensen, F. S. (2016b). Wildlife value orientations: A quantitative study of the general public in Denmark. *Human Dimensions of Wildlife*, *21*, 34–46. doi:10.1080/10871209.2015.1098753

Gill, R. B. (2000). Managing wildlife ethics issues ethically. *Human Dimensions of Wildlife*, *5* (4), 72–82. doi:10.1080/10871200009359196

Gilligan, C. (1982). *In a different voice*. Cambridge, MA: Harvard University Press.

Gliem, J. A., & Gliem, R. R. (2003). *Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for likert-type scales*. Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education, Columbus, Ohio.

Hermann, N., Voß, C., & Menzel, S. (2013). Wildlife value orientations as predicting factors in support of reintroducing bison and of wolves migrating to Germany. *Journal for Nature Conservation*, *21*, 125–132. doi:10.1016/j.jnc.2012.11.008

Igota, H., & Suzuki, M. (2008). Community-based wildlife management: A case study of Sika deer in Japan. *Human Dimensions of Wildlife*, *13*, 416–428. doi:10.1080/10871200802270141

Inglehart, R. (1990). *Culture shift in advanced industrial society*. Princeton, NJ: Princeton University Press.

Jackson, R. M., & Wangchuk, R. (2004). A community-based approach to mitigating livestock depredation by snow leopards. *Human Dimensions of Wildlife*, *9*, 307–315. doi:10.1080/10871200490505756

Kellert, S. R. (1993). Attitudes, knowledge, and behavior toward wildlife among the industrial superpowers: United States, Japan, and Germany. *Journal of Social Issues*, *49*, 53–69. doi:10.1111/josi.1993.49.issue-1

Kellert, S. R., & Berry, J. K. (1987). Attitudes, knowledge, and behaviors toward wildlife as affected by gender. *Wildlife Society Bulletin*, *15*, 363–371.

Knafo, A., & Schwartz, S. H. (2004). Identity formation and parent-child value congruence in adolescence. *The British Journal of Developmental Psychology*, *22*, 439–458. doi:10.1348/0261510041552765

Kohn, M. L., Slomczynski, K. M., & Schoenbach, C. (1986). Social stratification and the transmission of values in the family: A cross-national assessment. *Sociological Forum*, *1*, 73–102. doi:10.1007/BF01115074

Manfredo, M. J. (2008). *Who cares about wildlife? Social science concepts for exploring human-wildlife relationships and conservation issues*. New York, NY: Springer. doi:10.1007/978-0-387-77040-6

Manfredo, M. J., & Dayer, A. A. (2004). Concepts for exploring the social aspects of human–wildlife conflict in a global context. *Human Dimensions of Wildlife*, *9*, 317–328. doi:10.1080/10871200490505765

Manfredo, M. J., Teel, T., & Bright, A. (2003). Why are public values toward wildlife changing? *Human Dimensions of Wildlife*, *8*, 287–306. doi:10.1080/716100425

Manfredo, M. J., Teel, T. L., & Henry, K. L. (2009). Linking society and environment: A multilevel model of shifting wildlife value orientations in the western United States. *Social Science Quarterly*, *90*, 407–427. doi:10.1111/j.1540-6237.2009.00624.x

Manfredo, M. J., & Zinn, H. C. (1996). Population change and its implications for wildlife management in the new west: A case study of Colorado. *Human Dimensions of Wildlife*, *1* (3), 62–74. doi:10.1080/10871209609359070

Martín-López, B., Montes, C., & Benayas, J. (2007). The non-economic motives behind the willingness to pay for biodiversity conservation. *Biological Conservation*, *139*, 67–82. doi:10.1016/j.biocon.2007.06.005

Miller, K. K., & McGee, T. K. (2000). Sex differences in values and knowledge of wildlife in Victoria, Australia. *Human Dimensions of Wildlife*, *5* (2), 54–68. doi:10.1080/10871200009359179

Munro, L. (2001). Caring about blood, flesh, and pain: Women's standing in the animal protection movement. *Society & Animals*, *9*, 43–61. doi:10.1163/156853001300108982

Peterson, M. N., Hull, V., Mertig, A. G., & Liu, J. (2008). Evaluating household-level relationships between environmental views and outdoor recreation: The Teton Valley case. *Leisure Sciences*, *30*, 293–305. doi:10.1080/01490400803165073

Serenari, C., Peterson, M. N., & Clark, B. (2015). Theorizing logger religion within the Pacific Northwest timber conflict. *Worldviews*, *19*, 265–281. doi:10.1163/15685357-01903004

Serenari, C., Peterson, M. N., Gale, T., & Fahlke, A. (2015). Relationship between value orientations and wildlife conservation policy preferences in Chilean Patagonia. *Human Dimensions of Wildlife*, *20*, 271–279. doi:10.1080/10871209.2015.1008113

Shapiro, H. G., Erickson, K. A., Peterson, M. N., Frew, K. N., Stevenson, K. T., & Langerhans, R. B. (2016). Which species to conserve: Evaluating children's species-based conservation priorities. *Biodiversity and Conservation*, *25*, 539–553. doi:10.1007/s10531-016-1067-0

Siemer, W. F., Hart, P. S., Decker, D. J., & Shanahan, J. E. (2009). Factors that influence concern about human-black bear interactions in residential settings. *Human Dimensions of Wildlife*, *14*, 185–197. doi:10.1080/10871200902856138

Swami, V., Chamorro-Premuzic, T., Snelgar, R., & Furnham, A. (2011). Personality, individual differences, and demographic antecedents of self-reported household waste management behaviours. *Journal of Environmental Psychology*, *31*, 21–26. doi:10.1016/j.jenvp.2010.08.001

U.S. Department of the Interior, U.S. Fish and Wildlife Service and U.S. Department of Commerce, Bureau of the Census. (2011). *2011 national survey of fishinghunting, and wildlife-associated recreation*.,Washington, DC: Author.

Vaske, J. J., & Donnelly, M. P. (1999). A value-attitude-behavior model predicting wildland preservation voting intentions. *Society & Natural Resources*, *12* (6), 523–537. doi:10.1080/089419299279425

Vaske, J. J., Jacobs, M. H., & Sijtsma, M. T. J. (2011). Wildlife value orientations and demographics in the Netherlands. *European Journal of Wildlife Research*, *57*, 1179–1187. doi:10.1007/s10344-011-0531-0

Vaske, J. J., & Needham, M. D. (2007). Segmenting public beliefs about conflict with coyotes in an urban recreation setting. *Journal of Park and Recreation Administration*, *25* (4), 79–98.

Vollerbergh, W. A. M., Iedema, J., & Raaijmakers, Q. A. W. (2001). Intergenerational transmission and the formation of cultural orientations in adolescence and young adulthood. *Journal of Marriage and Family*, *63*, 1185–1198. doi:10.1111/j.1741-3737.2001.01185.x

Zelezny, L., Chua, P., & Aldrich, C. (2000). Elaborating on gender differences in environmentalism. *Journal of Social Issues*, *56*, 443–457. doi:10.1111/0022-4537.00177

Zinn, H. C., Manfredo, M. J., & Barro, S. C. (2002). Patterns of wildlife value orientations in hunters' families. *Human Dimensions of Wildlife*, *7*, 147–162. doi:10.1080/10871200290089427

Zinn, H. C., & Pierce, C. L. (2002). Values, gender, and concern about potentially dangerous wildlife. *Environment and Behavior*, *34*, 239–256. doi:10.1177/0013916502034002005