Undergraduate Career, Research and Technical Skills in Wildlife Education

Dr. Steven Boot Chumbley & Dr. Steven Lukefar

Texas A&M University-Kingsville

700 University Blvd., MSC 228

Kingsville, Tx 78363

steven.chumbley@tamu.edu

steven.lukefar@tamuk.edu

Undergraduate Career, Research and Technical Skills in Wildlife Education

Introduction

Assessment and inquiry into the insufficient level of education and lack of experience among professionals in the field of wildlife ecology has sparked debate at the national level (Metzgar, Hollwegg & Berkowitz, 1994; Kroll, 2007). The lack of quality education among graduates is increasingly noticeable to professionals in the wildlife field, which has incited a need for change in university education (Anderson, et al., 2003). Wildlife professionals have demonstrated unease regarding the inability of graduates to demonstrate critical thinking skills in wildlife concepts (Millenbah, 2003). Effective and innovative thinkers are needed in these wildlife and natural resource fields to ensure the health of global ecosystems and improve current environmental issues (Kroll, 2007). Strong research skills in graduates are essential in understanding future research needs in natural resource and wildlife management that are consistently changing (Curnow, 2000). Additionally, strong research skills are becoming a determinant in student ability to earn career positions (Stamp, Tan-Wilson, & Silva, 2015) and are classified as experiences that have a substantial impact on the retention of students in STEM fields (Gilmore, Vierya, Timmerman, Feldon, Maher, 2015).

Theoretical Framework

The theory of planned behavior (TPB) suggests that demographic variables and knowledge influences values and beliefs. These in turn affect attitude, intention and behavior. The theories impact the study of confidence levels and the factors that influence student success in the wildlife major. The theory of planned behavior represents behavior as a function of behavioral intentions and perceived behavioral control (PBC) (Azjen, 1991). Motivational factors are indications of how hard people are willing to try and how much of an effort they are planning to exert in order to perform the behavior.

Methodology

This non-experimental, descriptive study focused on post-secondary students enrolled in an introduction to Range & Wildlife Management course at Texas A&M University-Kingsville. This convenience sample of participants were selected based upon the criteria that they were enrolled in the first wildlife techniques course offered in the Texas A&M University-Kingsville degree plan. After IRB approval, the researchers used one class day within the second week of classes during the Fall 2019 semester to collect data. A total of 68 students participated in this study from a class of 70 resulting in a response rate of 97%. The instrument that guided this study was researcher developed, using the Texas standards for the secondary wildlife course. The 25-question instrument included the following five-item scales: *career skills* (ex. *Identify career development & entrepreneurship opportunities in the Wildlife field*). , *technical skills* (ex. *Analyzes the importance of wildlife, with an emphasis on use and management),* and *research skills* (ex. *Describes scientific methods of research).* Students responded to each item on a Likert-type rating scale: little to no knowledge (1), (2), some knowledge (3), (4), or high level of knowledge (5). Reliability of the wildlife confidence scale resulted in Cronbach's Alpha Coefficient of 0.96.

Findings

The goal of this study was to determine the level of student confidence within wildlife and natural resources. These scores were focused within three construct areas of *research, career* and *technical skills*. The overall mean was 3.01 with a standard deviation of 1.17. This resulted in an overall low to moderate level of confidence of participants in wildlife and natural resource management. It was found that the highest mean scores were found related to *technical* skills (M = 3.06, SD = 1.02). Participants had the lowest scores related to confidence in *career* skills (M = 2.92, SD = 0.84). Table one provides a breakdown of construct scores within the areas of *technical, research* and *career* skills.

Table 1

Mean Construct Scores

Constructs	*F*	*M*	*Mode*	*SD*
Technical Skills	68	3.06	3	1.02
Research Skills	68	3.01	3	0.99
Career Skills	68	2.92	2	0.84

The researchers looked at individual responses within the constructs, and the highest score was found for the individual statement, "*Analyzing the importance of wildlife, with an emphasis on use and management*", (M = 3.47, SD = 1.29). The second highest confidence scores was related to "*Discussing the importance and role of the Wildlife Management Areas of Texas in the management of private and public* lands" (M = 3.32, SD = 1.29). Disparities in means among the *career, technical,* and *research skills* constructs within each demographic area, were not statistically significant ($p < 0.05$). However, certain individual questions within each of these constructs were found to be statistically significant.

Conclusions & Recommendations

Overall, the scores reported by students in Introduction to Wildlife & Range Management indicated that students did not show a high level of confidence in topics related to wildlife and natural resource management. When comparing individual constructs, *technical skills* had the highest average of the three. These findings could be supported by previous studies that have shown project-based learning and contextualized science education to have positive impacts on students' attitude to learn science-based skills. Students scored the highest within questions related to the importance of wildlife management and management areas. As the class was an introductory wildlife course, consisting of students classified as Range and Wildlife Management majors, their high scores on these questions could be supported by previous experience and interest in wildlife recreation and other natural resources. Hunting is a common practice in the region and students may have developed fundamental values through their past experiences. Future research should target the efficiency of education programs in relaying the low scoring topics found within this survey of the research, career, and technical skills constructs to students. Education programs that include project-based learning and contextualized science should continue to be a goal among educators for natural resources and wildlife management majors, but education involving research and career skills should also be incorporated more thoroughly.

References

Anderson, D. R., E. G. Cooch, R. J. Gutierrez, C. J. Krebs, M. S. Lindberg, K. H. Pollock, C. A. Ribic, and T. M. Shenk. 2003. Rigorous science: suggestions on how to raise the bar. Wildlife Society Bulletin 31: 296–305.

Azjen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. doi:10.1016/0749-5978(91)90020-T

Curnow, R. D., "What are the research needs and skills of the future?" (2000). Wildlife Damage Management Conferences -- Proceedings. 8. https://digitalcommons.unl.edu/icwdm_wdmconfproc/8

Gilmore, J., Vierya, M., Timmerman, B., Feldon, D., and Maher, M. 2015. The relationship between undergraduate participation and subsequent research performance of early career STEM graduate students. *The Journal of Higher Education* 86(6): 834-863.

Kroll, A.J. 2007. Integrating professional skills in wildlife student education. *Management and Conservation* 71(1): 226-230.

Metzgar, L. H., Hollweg, K., & Berkowitz, A. 1994. Ecologists in precollege education. *Bulletin of the Ecological Society of America* 72(2): 113-116.

Millenbah, K. F. and Millspaugh J. J. 2003. Using experiential learning in wildlife courses to improve retention, problem solving and decision-making. *Wildlife Society Bulletin* 31(1): 127-137.

Stamp, N., Tan-Wilson, A., and Silva, A. 2015. Preparing graduate students and undergraduates for interdisciplinary research. *BioScience* 65(4): 431-439.