

Mechanical Aptitude of Underrepresented Agricultural Science Majors



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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, Hollweg & Berkowitz, 1994; Kroll, 2007).
- The lack of quality education among graduates is increasingly noticeable to professionals in the wildlife field (Anderson, et al., 2003).
- Strong research skills in graduates are essential in understanding future research needs in natural resource and wildlife management that are consistently changing (Curnow, 2000).

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) (Ajzen, 1991).

Methods

- 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.
- After IRB approval, the researchers used one class day within the second week of classes during the Fall 2019
- 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 Essential Knowledge and Skills (TEKS) for the Texas 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: of 1-5
- 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
- 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 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 highest scores were 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 "*Discussing the importance and role of the Wildlife Management Areas of Texas in the management of private and public lands*" ($M = 3.32$, $SD = 1.29$).

Conclusions/Discussion

- Overall, the scores 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.
- Hunting is a common practice in the region and students may have developed fundamental values through their past experiences.
- Education programs that include contextualized science should continue to be a goal among educators for natural resources and wildlife management majors.