





It pays to get paid: Factors influencing wildlife-related employment success

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Abstract

Individuals who are interested in wildlife-related careers take unpaid positions to gain experience and remain competitive in the job market. However, unpaid positions may not provide the same training, skills acquisition, or long-term success as paid positions. We surveyed 796 graduates of wildlife-related bachelor's degree programs from accredited U.S. universities to assess how experiences and skills gained in paid and unpaid positions affected long-term employment or educational success. We found that respondents with more paid employment experience were more likely to obtain full-time employment in a wildlife-related field than those who had worked more unpaid positions. Further, respondents reported gaining more skills associated with long-term success from paid positions than unpaid positions. Our results highlight the importance of both paid work and experiences that provide valuable skills training for success in wildlife-related fields. We urge wildlife-related employers to offer more paid positions in lieu of unpaid opportunities. We further suggest that job-seeking, early-career scientists carefully consider the skills they will gain from particular jobs, and critically scrutinize the potential for long-term benefits before accepting an unpaid position.

KEYWORDS

career success, internship, paid, survey, unpaid, volunteer, wildlife careers

In a competitive employment market, aspiring professionals seek opportunities to increase their marketability through experience. There are many ways to obtain experience, including volunteering, internships with or without compensation, and part- or full-time employment. A 2014 survey of more than 10,000 students found that over 60% of recent undergraduate respondents participated in at least one internship prior to graduation (National Association of Colleges and Employers 2014). Employers actively encourage students to obtain experience through paid and unpaid employment prior to graduation to increase their marketability for competitive jobs (Bureau of Labor Statistics 2017). The terms associated with entry-level opportunities are often used interchangeably (Whitaker 2003) and it is unclear which positions may be most beneficial to career success. Correctly identifying position terms is important due to wage laws, which bind all employers. Most notably, the Fair Labor Standards Act (2018) sets a federal minimum wage and provides legal requirements that volunteer and internship positions be primarily training-based and should not be established to replace paid employees (Whitaker 2003). Based on the legal definitions, many wildlife-related volunteer and internship positions do not meet the standards under the Fair Labor Standards Act (2018); however, special exemptions have been made for federal, state, and local government, and non-profit organizations. Exemptions for various organizations are especially salient for those seeking employment in wildlife-related fields because relatively few opportunities exist in the private sector.

To alleviate confusion between the terms used to describe entry-level employment, we focused on differentiating between paid and unpaid entry-level positions in wildlife-related fields. Unpaid positions became more prevalent in the United States during the 2010s and are projected to continue increasing through 2025 (U.S. Bureau of Labor Statistics 2017). Experience increases the likelihood of employment, upward mobility, and early career success (Knouse et al. 1999, Gault et al. 2000, Nunley et al. 2016, Siedler et al. 2016). Entry-level opportunities can be critical for gaining the skills necessary to pursue careers as wildlife professionals, but the relevance and quantity of skills attained through paid versus unpaid positions may vary. Thus, it is important to assess differences in skills attained through paid versus unpaid employment and identify whether the type of position provides differential benefits to participants' future career success.

Despite the ongoing demand for entry-level workers, all experiences may not lead to success equally. Paid positions may offer different experiences, lead to different career outcomes, and be more likely to lead to full-time employment and higher salaries compared to unpaid roles (Holford 2017). The difference in career outcomes between paid and unpaid jobs may be because paid opportunities offer a greater diversity of learning experiences relative to unpaid opportunities (Siebert and Wilson 2013). Similarly, positions that provide more opportunities for autonomy and involvement in complex, challenging projects increase employability (Taylor 1988). Paid positions are often more likely to provide opportunities leading to the improvement and development of professional skills (Crain 2016). Recognizing and accounting for the disparity between paid and unpaid positions will be key to parsing out the factors that influence career success in scientific fields (Taylor 1988, Crain 2016).

Although paid positions may be more valuable for acquiring skills and responsibility, opportunities for paid employment (especially at the entry-level) may be less common than unpaid positions, particularly in wildlife-related fields (Fournier and Bond 2015). Budgets from both federal and state wildlife agencies, as well as non-profit organizations, rely heavily on government funding, however, discretionary spending for natural resource programs has declined over 50% since 1977 (Austin 2016). Loss of funding in wildlife-related fields and associated high demand for entry-level opportunities has led to an increased prevalence of temporary, underpaid, and/or volunteer positions for early-career scientists (Fournier and Bond 2015, Owens and Stewart 2016). Some organizations require that participants pay-to-play, due to the high demand for wildlife-related work experiences. Participants may be charged for travel, housing, and/or research expenses in return for the experience of working on high-profile projects (Ellis 2003, Campbell and Smith 2006). Although early-career wildlife professionals and recent graduates continue to pursue these opportunities, it is unclear whether unpaid and potentially-costly positions provide the necessary skills to increase employability. Thus, there is a need to understand the implications of different early-career opportunities on skill acquisition and career success.

The motivation for our study was to expand upon the work of Fournier and Bond (2015) using a quantitative approach to understand the influence of early-career opportunities on success in wildlife-related fields. Our objective was to understand relationships between paid and unpaid work, skills obtained from each, and how these skills translate into career success in a wildlife-related field. We studied relationships between paid and unpaid employment on the acquisition of wildlife-related skills. Next, we associated these skills with success, which we defined as full-time employment in a wildlife-related job or enrollment in a wildlife-related graduate program. We predicted that 1) paid positions would increase the total number of skills obtained, 2) some specific skills (i.e., field techniques, research design, scientific writing, etc.) acquired from different work experiences would correlate with success, and 3) the total number of positions (regardless of paid or unpaid) would be positively correlated with success. Our predictions are based on the findings that have shown that paid and unpaid employment in science, technology, engineering, and math (STEM) fields may lead to differential career success (Fournier et al. 2019).

METHODS

Study design

We conducted an anonymous online survey to assess work experience, success, and skills gained in wildlife-related fields. We defined wildlife-related fields as any field related to wildlife management, conservation, education, or research. This included wildlife biology, management, conservation, ecology, communication/education, rehabilitation, or policy fields. We designed our survey questionnaire with a combination of multiple choice, select-all-that-apply, and open-ended responses. For example, respondents were asked to select all skills gained from a list of potential skills, and their age, sex, and race from a list of multiple-choice options, and were given open-ended responses at the end of the survey to comment on specific experiences (Tables S2 and S3, available online in Supporting Information). Our target response group included people who had received a bachelor's degree from a biological science or natural resources department at an accredited university in the past 20 years. We intentionally targeted an overly-broad population to ensure that our survey reached graduates who intended to pursue a wildlife-related career following their undergraduate education. Note that our broad sampling approach resulted in the survey being sent to many who were not intending to pursue a career in wildlife-related fields.

We administered the internet survey in 3 ways. First, we targeted students at the University of Florida. We obtained alumni contact information for all students who completed a bachelor's degree from the College of Agriculture and Life Sciences (CALs) at the University of Florida between 1997 and 2017. We sent an email to 14,854 graduates with a short description of the survey and a unique link to complete it (respondents were linked to their email addresses and were only allowed one opportunity to complete the survey). The survey was administered via Qualtrics Software (Qualtrics 2020). We sent 2 reminder emails to students who had not responded. Second, we targeted U.S. universities with departments/colleges of natural resources, biology, ecology, plant and animal sciences, and/or environmental science departments. We selected relevant departments (see above) ranked in the top 10 by US News and World Report (2018) and College Factual (2017). We focused on top programs because of their ability to generate professionals for wildlife-related fields. Overall, we requested 23 departments/colleges administer the survey to their alumni. We received varied responses, with 5 departments/colleges agreeing to share the survey with their alumni; however, the numbers of alumni were not provided. Finally, to ensure we further increased our audience, we broadcast our survey through ECOLOG, the Ecological Society of America's discussion board for jobs, grants, and other news, and on the Texas A&M Wildlife and Fisheries and Society for Conservation Biology job boards. We also promoted our survey through Twitter and Facebook accounts associated with the University

of Florida. We encouraged participating universities to post the survey on their respective social media pages as well.

Survey instrument

We administered the survey online in English through Qualtrics (Qualtrics 2020). We investigated experience with paid or unpaid positions, current success in wildlife-related fields (defined as those either enrolled in an advanced degree in a wildlife-related field or those employed full-time in a wildlife-related field), and demographics. The first step in the survey was designed to limit responses to those who fit the primary criterion, i.e., interest in pursuing a career in a wildlife-related field. If respondents did not fit the criteria, the survey was concluded. Next, we asked if the respondent was currently seeking an advanced degree and if the degree field was wildlife-related. We also asked if the respondent was currently working in a wildlife-related field, if that job was full-time or part-time, and how long they anticipated staying in their current position. We then asked if respondents had, prior to their current position, held any paid (more than \$300/month) or unpaid (less than \$300/month) volunteer, job, or internship positions in a wildlife-related field, the total number of positions, and the duration of those positions. We established the \$300 threshold as the distinction between paid vs. unpaid positions based on Fournier and Bond (2015), who determined that \$300/month with housing was comparable in compensation to minimum wage, whereas <\$300/month without housing was considered less than minimum wage. We also asked respondents to report any fees (moving costs, travel, project fees, housing) associated with unpaid positions to categorize them as pay-to-play.

We additionally asked respondents to choose the types of skills obtained while working in those positions from a provided list. We chose to list skills, ranging from entry-level to advanced, that encompassed different proficiencies necessary for success in wildlife-related fields: field techniques, office skills, research design, data analysis/management, outreach/environmental education, stakeholder communication, supervising others, and scientific writing (Silvy 2012, Henke and Krausman 2017). We asked respondents to list whether each skill was obtained in paid or unpaid positions to determine the total number of the listed skills associated with paid and unpaid employment. We concluded the survey by asking respondents to report demographic data including age, sex, race, current household income, and parents' highest level of education. We included these variables to account for other factors likely to influence long-term career success (Greenhaus et al. 1990, Melamed 1995, Heward et al. 1997, Brown 2004). We also included an open-ended question to allow respondents to give feedback about their experiences working in wildlife-related fields.

Statistical analysis

We defined successful respondents as those either enrolled in an advanced degree in a wildlife-related field or those employed full-time in a wildlife-related field. In the survey instrument we defined wildlife-related fields as any field related to wildlife management, conservation, education, or research. This included wildlife biology, management, conservation, ecology, communication/education, rehabilitation, and policy. We defined all remaining respondents as unsuccessful. The unsuccessful group included respondents who were employed part-time in a wildlife-related field and employed full-time or in a degree program that was not related to wildlife. We excluded respondents who had not completed a bachelor's degree, never intended to pursue a wildlife-related field, and were not currently pursuing wildlife-related degrees or employment. We included respondents who were initially unsure about their future career goals, even if they did not ultimately pursue a wildlife-related career, as these individuals may have been dissuaded from this path due to other factors of interest. To account for potential bias amongst respondents, we compared early responders to late responders and found no significant differences in degree type, demographics, paid or unpaid experiences, or success (Siemiatycki and Campbell 1984, O'Neill et al. 1995).

To test the relationship between position type (paid vs. unpaid) and success, we conducted mixed-effect logistic regression with the number of unpaid, paid, and total positions as predictor variables, and academic success (enrollment in an advanced degree in a wildlife-related field), employment success (full-time employment in a wildlife-related field) or combined success (either employment, enrollment, or both, a binary variable) as the response. To determine which variables to include as random effects, we ran logistic regression analysis with demographics (time since graduation, age, sex, race, and parental education) as predictor variables and success as a response variable. We included demographics with statistically significant relationships with success as random effects in each of these mixed-effects models to control and test their influence, such that each level of the demographic grouping variable had a random intercept and slope (Bates et al. 2015). To test relationships between number of skills reported and position type, we used a Wilcoxon Rank Sum test with continuity correction to compare the total number of skills gained in paid and unpaid positions. To test the relationship between paid and unpaid positions and likelihood of gaining an individual skill, we conducted a binary logistic regression for each skill, with the total number of each position type as a predictor variable. Finally, to determine which skills were most commonly associated with each type of success, we conducted a regression analysis with each skill included as a binary predictor variable and success as a response variable. To isolate the influence of gaining a specific skill on success, as with demographic factors, we controlled for the influence of the total number of positions by including it as a random variable. We evaluated all results based on a threshold for statistical significance of 0.05 ($\alpha = 0.05$). We compared beta estimates and associated *P*-values to assess the strength of relationships between variables. We conducted all analyses in program R Version 3.4.3 (R Development Core Team 2017) using packages lme4 (Bates et al. 2015) and MASS (Venables and Ripley 2002).

RESULTS

We received 796 responses and had a 91% completion rate from those who chose to take the survey. Of the 14,854 University of Florida alumni contacted, 289 completed the survey, yielding a 1.9% response rate. Note that the survey description emphasized a focus on wildlife-related fields, whereas many CALS alumni completed degrees unrelated to wildlife, likely decreasing the response rate. The remaining 507 survey responses came from respondents affiliated with over 200 additional colleges and universities (Table S1, available online in Supporting Information). We were unable to calculate a response rate for these respondents because we were not provided data on the number of alumni contacted. After removing all respondents who did not complete a bachelor's degree or never had any intention of pursuing a wildlife-related field, we retained 667 respondents for our analyses.

Respondent overview

Of the 667 respondents remaining in our sample, 62% of respondents were 30 years old or younger, 80% of respondents were white, and 68% of respondents were female (Table S2). Ninety-six percent of respondents graduated from universities in the United States, whereas 6% of respondents graduated from international universities (including institutions in Canada, Germany, Hong Kong, and India, among others). Fifty-six percent of respondents reported themselves as successful using our definition of either working full-time or pursuing advanced degrees in wildlife-related fields. Eighteen percent of respondents were pursuing advanced degrees in a wildlife-related field. Fifty-seven percent of respondents were currently employed full time and 16% were employed part-time. Of those employed either part-time or full-time, 64% were employed in a wildlife-related field.

Ninety-two percent of respondents reported having at least one type of position in a wildlife-related field (Figure 1). Eighty-one percent of respondents held between 1 and 3 unpaid positions prior to their current career, whereas 20.5% of respondents reported never holding an unpaid wildlife-related position. Sixty-one percent of

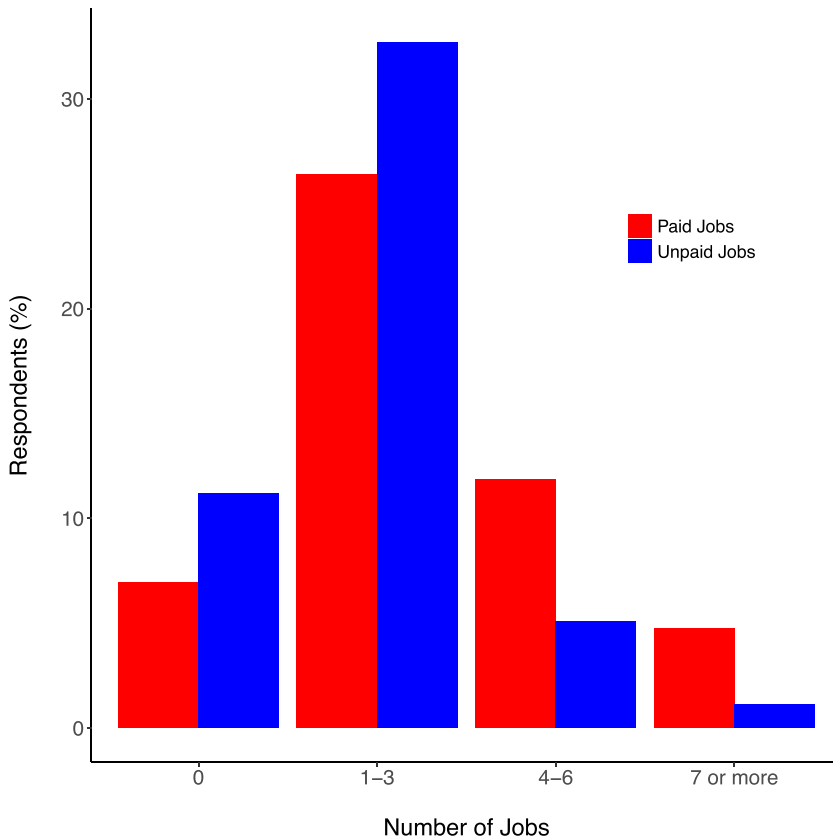


FIGURE 1 Total number of paid and unpaid positions held by respondents prior to their current position, as reported in an anonymous online survey conducted in 2017–2018 targeting respondents with a bachelor's degree in wildlife-related fields from accredited U.S. universities

respondents held between 1 and 3 paid positions, whereas 12.7% reported that they never held a paid position (Figure 1). Thirty percent of respondents held 4 or more paid positions. Forty-eight percent of respondents who had an unpaid position also reported that they paid expenses associated with the position (pay-to-play), including airfare (40%), housing (51.7%), project fees (14.9%), and moving costs (37.5%).

We found differences between various demographic factors (age, sex, race, parent's education) and the number of paid and unpaid jobs individuals had held, but not on the total number of jobs held (Table S3). Women on average had fewer paid positions and more unpaid positions than men and non-white respondents had fewer paid positions than white respondents. However, only for one demographic factor, time since graduation, did we find a significant difference in success ($\beta = 0.09$, $SE = 0.010$, $P \leq 0.001$). We therefore included the term time since graduation as a random effect in all additional models to account for age-specific differences in success.

Experience and success

We found a positive significant relationship between the number of paid positions ($\beta = 0.68$, $SE = 0.11$, $P \leq 0.001$) and the probability of being successful when controlling for time since graduation. Individuals with ≤ 3 paid positions had a 54% chance of being successful (either employed full-time in a wildlife related field or enrolled full-time in a wildlife-related degree), whereas those with ≥ 7 paid positions had an 82% chance of being successful. Similarly,

there was a positive relationship between the total number of positions of any kind (paid or unpaid) and success of any kind ($\beta = 0.43$, $SE = 0.09$, $P \leq 0.001$). There was no relationship between the number of unpaid positions and the probability of having any type of success ($\beta = -0.04$, $SE = 0.13$, $P = 0.78$).

When measuring success only as full-time employment in a wildlife-related field, we found a positive significant relationship with the number of paid positions ($\beta = 0.73$, $SE = 0.11$, $P \leq 0.001$), but not with unpaid positions ($\beta = 0.21$, $SE = 0.13$, $P = 0.10$). As a baseline, individuals without paid positions had a 20% probability (95% CI = 12.5–26.6%) of being employed full-time in a wildlife related field. For those with 1 to 3 paid positions, the probability increased to 36% (95% CI = 32%–40%), for those with 3 to 6 paid positions, it increased to 53% (95% CI = 48–58%), and for those with ≥ 7 paid positions, the probability of success was 69% (95% CI = 61–74%). When measuring success as enrollment in a wildlife-related degree program, there was no relationship between the number of paid ($\beta = -0.02$, $SE = 0.12$, $P = 0.9$) or unpaid positions ($\beta = 0.2$, $SE = 0.16$, $P = 0.22$).

Paid and unpaid skills

There was a significant difference between the total number of skills gained from unpaid positions (Figures 2 and 3, $\bar{x} = 2.3$, $SE = 2.1$) and the total skills gained from paid positions ($\bar{x} = 4.2$, $SE = 2.9$, $P \leq 0.001$). Type of skill gained varied with the type of position. The skills field techniques, research design, outreach/environmental education, and supervising others were positively correlated with both paid and unpaid positions (Table 1). However, all but one, outreach/environmental education, had larger beta estimates for paid positions, indicating a stronger correlation between paid positions and the likelihood of obtaining that skill. The skills data analysis/management, office skills, scientific writing, and stakeholder communication, were positively correlated with the total number of paid positions held by a respondent, but not with the total number of unpaid positions (Table 1). The probability of obtaining office skills was 48% (95% CI = 35–61%) for those with 0 paid positions, compared to 97% (95% CI = 48–99%) for those with 7 or more paid positions.

In terms of success, when controlling for the total number of paid and unpaid positions, office skills ($\beta = 0.77$, $SE = 0.27$, $P = 0.02$), scientific writing ($\beta = 0.64$, $SE = 0.27$, $P = 0.009$), and stakeholder communication

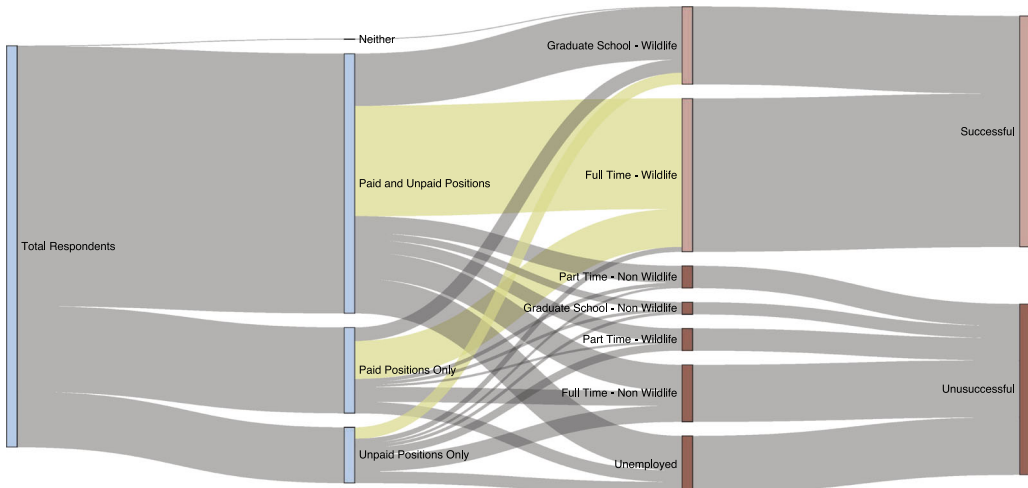


FIGURE 2 Classification of survey respondents as either successful or unsuccessful as a function of the type of post-bachelor's degree work experience, from an anonymous online survey conducted in 2017–2018 targeting respondents with a bachelor's degree in wildlife-related fields. Yellow links show significant ($P < 0.01$) positive predictors of success

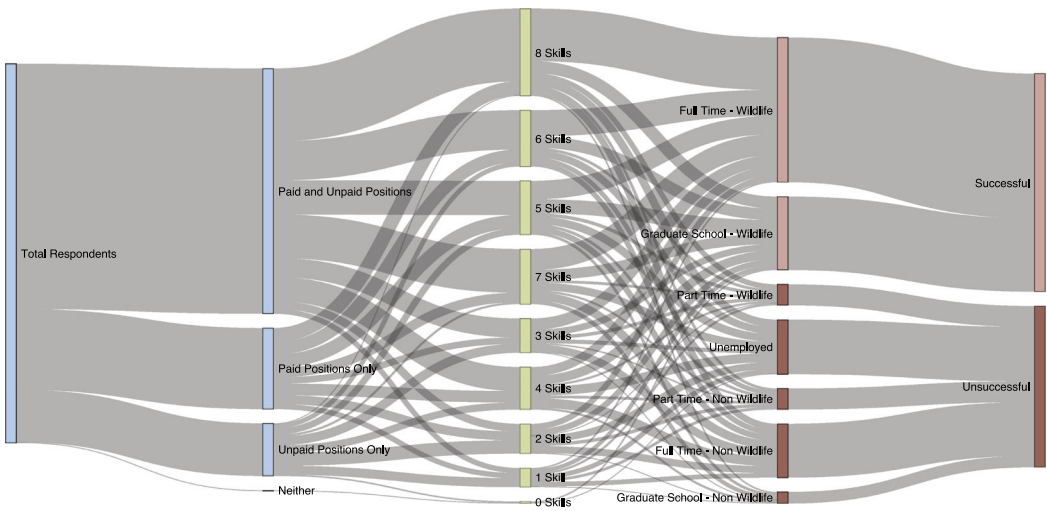


FIGURE 3 Classification of survey respondents as either successful or unsuccessful as a function of the number of skills gained through post-bachelor's degree work experience, from an anonymous online survey conducted in 2017–2018 targeting respondents with a bachelor's degree in wildlife-related fields

TABLE 1 Reported skills and β estimate (P -value) for skills gained as a function of number of paid and unpaid positions based on logistic regression (skill gained or not gained) for an anonymous online survey conducted in 2017–2018 targeting respondents with a bachelor's degree in wildlife-related fields

Skill	β estimate paid position	β estimate unpaid position
Field techniques	1.38 ($P \leq 0.001$)	0.55 ($P = 0.02$)
Data analysis/management	0.68 ($P \leq 0.001$)	0.2 ($P = 0.14$)
Outreach/environmental education	0.28 ($P = 0.02$)	0.68 ($P \leq 0.001$)
Office skills	1.13 ($P \leq 0.001$)	-0.11 ($P = 0.47$)
Scientific writing	0.52 ($P \leq 0.001$)	0.17 ($P = 0.20$)
Research design	0.72 ($P \leq 0.001$)	0.41 ($P = 0.003$)
Supervising	0.96 ($P \leq 0.001$)	0.54 ($P \leq 0.001$)
Stakeholder communication	0.64 ($P \leq 0.001$)	0.18 ($P = 0.16$)

($\beta = 0.67$, $SE = 0.21$, $P = 0.007$) were positively correlated with employment in a wildlife-related field. Office skills ($\beta = -0.77$, $SE = 0.28$, $P \leq 0.001$) and outreach/environmental education ($\beta = -0.54$, $SE = 0.25$, $P = 0.02$) were negatively associated with enrollment in a wildlife-related advanced degree program and research design ($\beta = 0.6$, $SE = 0.3$, $P = 0.014$) was positively correlated with enrollment in a wildlife-related advanced degree.

DISCUSSION

Aspiring wildlife professionals were much more likely to be successful in their field if they took paid positions, with an increase of 2–3 paid jobs doubling their probability of employment success. For wildlife-related fields, as for others, paid positions appear to be more valuable for career advancement (Taylor 1988, Crain 2016, Fournier et al. 2019).

Though we could not directly test the pathway of position type amongst our respondents, we found no evidence to suggest that initially taking an unpaid position could lead to a paid position in the future. In fact, unpaid positions may decrease the earning potential of scientists without paid positions, at least in the short-term (Fournier et al. 2019). The stronger correlation between paid positions vs. unpaid and overall success may be due to the greater diversity and quality of skills obtained in these positions (Taylor 1988, Siebert and Wilson 2013, Crain 2016). Skills in research design, data analysis, and supervising others are necessary for advancement in many natural resource careers (Lucas et al. 2017). All such skills were correlated with paid positions, and we found that certain skills that were correlated with employment success were developed primarily in paid positions. We found that scientific writing, data analysis, and stakeholder communication, crucial skills for many wildlife-related positions (Jacobson and Duff 1998, Colton and Surasinghe 2014, Stevenson and Peterson 2015), were not likely to be acquired in unpaid positions. Aspiring professionals should consider prioritizing the pursuit of these skills, along with paid positions, whenever possible.

Although paid positions can increase the probability of employment and are correlated with higher salaries (Fournier et al. 2019), neither type of position seems to influence enrollment in an advanced degree program. However, not surprisingly, younger respondents (under 30) were more likely to be in graduate programs than older respondents (over 31) (NSF 2018). Nevertheless, unpaid and paid positions may provide networking opportunities for aspiring academics (and professionals) of all ages. Many respondents noted networking was critical for achieving success in wildlife-related fields, saying, "It's all about networking in this job field" and "I always encourage volunteering in order to gain experience and network....best way to get your foot in for job referrals!". These personal connections can influence future success regardless of the type of positions (Fournier et al. 2019). Furthermore, entry-level experience in science fields, whether paid or unpaid, can lead to greater persistence in science fields 3 years in the future (Fournier et al. 2019). Persistence in wildlife-related work shows dedication to the subject matter, which may be valued by professors selecting graduate students (Henke and Krausman 2017).

The increased tendency of organizations to offer unpaid alternatives to paid positions (Owens and Stewart 2016) does not benefit aspiring wildlife professionals. Not only do unpaid and pay-to-play positions fail to provide the most useful skills, but survey respondents also noted the challenges associated with working these types of positions; one successful respondent commented, "[E]veryone wants to save the whales, no one thinks about how that'll pay their rent and a comfortable lifestyle. The stress of part-time contracts and a lack of opportunities isn't worth it." Unpaid positions (and particularly pay-to-play positions) may not be worth accepting unless they serve only to avoid leaving the field entirely (Fournier et al. 2019). However, with paid positions becoming increasingly scarce, aspiring scientists may ultimately choose to pursue an alternative career rather than continue to languish in positions that, according to one successful survey respondent, "are temporary without benefits and little to no room to professionally advance." The financial difficulties associated with unpaid positions may also act as barriers to increasing the diversity of underrepresented socioeconomic, gender, and racial groups in the wildlife field. This, in turn, limits diverse viewpoints and innovative problem-solving strategies (Copeland 1988, Thomas 1990, Reynolds and Lewis 2017) needed to solve dynamic wildlife-related problems in the future (Fournier and Bond 2015). Women professionals are particularly disadvantaged, as along with other studies, we found that more women were in unpaid positions than men, despite equivalent education backgrounds (Fournier et al. 2019). We did not find significant differences across race/ethnicity, age, and parent education level, but this undoubtedly requires more research given the limitations of our sample. As the issues of justice, equity, diversity, and inclusion in STEM, natural resources, and society at large become increasingly important, obtaining a more representative sample may help differentiate how paid and unpaid positions impact certain groups (Bailey et al. 2020, Forrester 2020, Hofstra et al. 2020). Ultimately, an increase in funding opportunities for natural resources, leading to increased availability of quality, paid positions, will likely be necessary to retain aspiring wildlife professionals. Whereas reducing the number of unpaid positions may cause the wildlife field to shrink, converting unpaid positions into paid ones would strengthen the field as a whole by providing talented and diverse aspiring professionals the opportunities to acquire and contribute their skills and perspectives.

Like many preliminary investigations, there were a number of limitations to our study that can be improved with future work. Although many recipients who received the survey did not fall within the scope of our survey population (those in wildlife-related fields), we still had a limited sample size as a result of our low survey response rates. Low response rates are common for online surveys (Daikeler et al. 2020), but future work should include phone interviews, follow-ups, and incentives to bolster response rates (Willcox et al. 2010, Smith et al. 2019). Additionally, it is possible our survey did not adequately capture the population of aspiring and current wildlife professionals. To ensure a broad range of respondents from wildlife-related fields, future survey efforts should work directly with undergraduate and graduate coordinators at institutions with wildlife programs. Additionally, our conclusion may also be limited by our definition of success: full-time work, or education in a wildlife-related field. Our survey did not allow us to effectively identify if and how people pursue these careers part-time, balancing some of the tradeoffs and hardships noted by respondents. Despite these shortcomings, our findings provide a foundation for understanding how early career experiences can impact future success in the wildlife profession.

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

ETHICS STATEMENT

All survey methods were approved by the University of Florida's Institutional Review Board (IRB #201602684).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

- Austin, D. A. 2016. Discretionary budget authority by subfunction: an overview. CRS Report R41726. Congressional Research Service, Library of Congress. <<https://crsreports.congress.gov/product/pdf/R/R41726>>. Accessed 29 Sep 2021.
- Bailey, K., N. Morales, and M. Newberry. 2020. Inclusive conservation requires amplifying experiences of diverse scientists. *Nature Ecology & Evolution* 4:1294–1295.
- Bates, D., M. Maechler, B. Bolker, and S. Walker. 2015. Fitting linear mixed-effects models using lme4. *Journal of Statistical Software* 67:1–48.
- Brown, M. T. 2004. The career development influence of family of origin: considerations of race/ethnic group membership and class. *The Counseling Psychologist* 32:587–595.
- Campbell, L. M., and C. Smith. 2006. What makes them pay? Values of volunteer tourists working for sea turtle conservation. *Environmental Management* 38:84–98.
- College Factual. 2017. 2017 Best General Biology Schools. <<https://www.collegefactual.com/majors/biological-biomedical-sciences/general-biology/rankings/top-ranked/>>. Accessed 2 Apr 2019.
- Colton, J. S., and T. D. Surasinghe. 2014. Using collaboration between English and biology to teach scientific writing and communication. *Journal of College Science Teaching* 44:31–39

- Copeland, L. 1988. Learning to manage a multicultural workforce. *Training* 25:48–56.
- Crain, A. 2016. Understanding the impact of unpaid internships on college student career development and employment outcomes. Nace Foundation. <<https://sites.sju.edu/careers/files/the-impact-of-unpaid-internships-on-career-development.pdf>>. Accessed Nov 2017.
- Daikeler, J., M. Bošnjak, and K. Lozar Manfreda. 2020. Web versus other survey modes: an updated and extended meta-analysis comparing response rates. *Journal of Survey Statistics and Methodology* 8:513–539.
- Ellis, C. 2003. When volunteers pay to take a trip with scientists—Participatory Environmental Research Tourism (PERT). *Human Dimensions of Wildlife* 8:75–80.
- Forrester, N. 2020. Diversity in science: next steps for research group leaders. *Nature* 585:S65–S67.
- Fournier, A. M. V., and A. L. Bond. 2015. Volunteer field technicians are bad for wildlife ecology. *Wildlife Society Bulletin* 39:819–821.
- Fournier, A. M. V., A. J. Holford, A. L. Bond, and M. A. Leighton. 2019. Unpaid work and access to science professions. *PLoS ONE* 14:e0217032
- Gault, J., J. Redington, and T. Schlager. 2000. Undergraduate business internships and career success: are they related? *Journal of Marketing Education* 22:45–53.
- Greenhaus J. H., S. Parasuraman, and W. M. Wormley. 1990. Effects of race on organizational experiences, job performance evaluations, and career outcomes. *Academy of Management Journal* 33:64–86.
- Henke, S. E., and P. R. Krausman. 2017. *Becoming a wildlife professional*. Johns Hopkins University Press. Baltimore, Maryland, USA.
- Heward C, P. Taylor, and R. Vickers. 1997. Gender, race and career success in the academic profession. *Journal of Further and Higher Education* 21:205–218.
- Hofstra, B., V. V. Kulkarni, S. M.-N. Galvez, B. He, D. Jurafsky, and D. A. McFarland. 2020. The diversity–innovation paradox in science. *Proceedings of the National Academy of Sciences* 117:9284–9291.
- Holford, A. 2017. Access to and returns from unpaid graduate internships. Institute of Labor Economics. University of Essex, Bonn, Germany.
- Jacobson, S. K., and M. D. Duff. 1998. Training idiot savants: the lack of human dimensions in conservation biology. *Conservation Biology* 12:263–267.
- Knouse, S. B., J. R. Tanner, and E. W. Harris. 1999. The relation of college internships, college performance, and subsequent job opportunity. *Journal of Employment Counseling* 36:35–43.
- Lucas, J., E. Gora, and A. Alonso. 2017. A view of the global conservation job market and how to succeed in it. *Conservation Biology* 31:1223–1231.
- Melamed, T. 1995. Career success: the moderating effect of gender. *Journal of Vocational Behavior* 47:35–60.
- Nunley, J. M., A. Pugh, N. Romero, and R. A. Seals. 2016. College major, internship experience, and employment opportunities: estimates from a résumé audit. *Labour Economics* 38:37–46.
- National Association of Colleges and Employers. 2014. *The Class of 2014 Student Survey Report: Executive Summary*. Bethlehem, PA.
- National Science Foundation [NSF], National Center for Science and Engineering Statistics. 2018. Doctorate recipients from U.S. universities: 2016. Special Report NSF 18-304. Alexandria, VA. <<https://www.nsf.gov/statistics/2018/nsf18304/>>. Accessed Jul 2020.
- O'Neill, T. W., D. Marsden, and A. J. Silman. 1995. Differences in the characteristics of responders and non-responders in a prevalence survey of vertebral osteoporosis. *European Vertebral Osteoporosis Study Group. Osteoporosis international* 5: 327–334.
- Owens, R., and A. Stewart. 2016. Regulating for decent work experience: meeting the challenge of the rise of the intern. *International Labour Review*. 155:679–709.
- Qualtrics. 2020. Qualtrics, Provo, Utah, USA. <<https://www.qualtrics.com>>. Accessed Dec 2017.
- R Development Core Team. 2017. R: a language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. Version 3.4.3. <<http://www.R-project.org/>>. Accessed 1 Dec 2017.
- Reynolds, A., and D. Lewis. 2017. Teams solve problems faster when they're more cognitively diverse. *Harvard Business Review* 30 March 2017.
- Siebert, S., and F. Wilson. 2013. All work and no pay: consequences of unpaid work in the creative industries. *Work, Employment and Society* 27:711–721.
- Siedler, T., N. Saniter, and M. Schumann. 2016. Door opener or waste of time? The effects of student internships on labor market outcomes. *Beiträge zur Jahrestagung des Vereins für Socialpolitik 216: Demographischer Wandel—Session: Labor and Training* (8141).
- Siemiatycki, J., and S. Campbell. 1984. Nonresponse bias and early versus all responders in mail and telephone surveys. *American Journal of Epidemiology* 120:291–301.
- Silvy, N. J. 2012. *The wildlife techniques manual*. Johns Hopkins University Press, Baltimore, Maryland, USA.

- Smith, M. G., M. Witte, S. Rocha, and M. Basner. 2019. Effectiveness of incentives and follow-up on increasing survey response rates and participation in field studies. *BMC Medical Research Methodology* 19:230.
- Stevenson, K. T., and M. N. Peterson. 2015. How experiential service-learning affects student perceptions of education in their careers and as a wildlife management activity. *Wildlife Society Bulletin* 39:732–737.
- Taylor, M. S. 1988. Effects of college internships on individual participants. *Journal of Applied Psychology* 73:393–401.
- Thomas, R. R., Jr. 1990. From affirmative action to affirming diversity. *Harvard Business Review*. March-April:107–117.
- U.S. Bureau of Labor Statistics. 2017. 37 percent of May 2016 employment in occupations typically requiring postsecondary education. <<https://www.bls.gov/opub/ted/2017/37-percent-of-may-2016-employment-in-occupations-typically-requiring-postsecondary-education.htm>>. Accessed 1 Apr 2019.
- U.S. Department of Labor Wage and Hour Division. 2018. Fact Sheet #71: Internship Programs Under The Fair Labor Standards Act. Washington, DC, USA.
- U.S. News and World Report. 2018. Best Biological Science Programs 2018. <<https://www.usnews.com/best-graduate-schools/top-science-schools/biological-sciences-rankings>>. Accessed 2 Apr 2019.
- Venables, W. N., and B. D. Ripley. 2002. *Modern applied statistics with S*. Fourth edition. Springer, New York, New York, USA.
- Whitaker, D. M. 2003. The use of full-time volunteers and interns by natural-resource professionals. *Conservation Biology* 17:330–333.
- Willcox, A. S., W. M. Giuliano, and G. D. Israel. 2010. Effects of token financial incentives on response rates and item nonresponse for mail surveys. *Human Dimensions of Wildlife* 15:288–295.

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SUPPORTING INFORMATION

Additional supporting material may be found in the online version of this article at the publisher's web-site. This includes a list of colleges and universities represented in the survey, demographic details of the survey respondents (age, sex, race/ethnicity, marital status, income, and parent's education), and reported paid and unpaid positions of survey respondents across demographic groups.

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