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An Exploratory Study of Duty-Related Stress Among Conservation Officers

A thesis

presented to

the faculty of the Department of Criminal Justice and Criminology

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Master of Arts in Criminal Justice and Criminology

by

Logan Ledford

December 2019

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Keywords: Police Stress, Rural, Conservation Officers, Policing

ABSTRACT

An Exploratory Study of Duty-Related Stress Among Conservation Officers,

by

Logan Ledford

Research relating to police stress has typically focused on officers working in urban areas, neglecting their rural counterparts. This is especially true of conservation officers, who are tasked with enforcing laws in state parks and other recreational areas. To date, only a handful of studies have sought to better understand their experiences and perceptions. The current study seeks to further our understanding of conservation officer stress in three unique ways: (1) via applying McCreary and Thompson's (2006) operational police stress scale (PSQ-Op) to the population, (2) determining whether officer characteristics (e.g., age, education, length of service) affect perceived stress, and (3) exploring the influence of various job duties on these perceptions. Survey data are gathered from officers located in several states, with results serving to improve our understanding of conservation officer stress.

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CHAPTER 1

INTRODUCTION

The United States' National Park System has experienced exponential visitor growth over the last two decades, with totals peaking in 2018 at nearly 318 million unique visitors for the year. This figure is approximately 70 million higher than it was twenty years ago (NPS, 2019). As recreational interest in federal parks has grown, state parks have also experienced noticeable increases in visitation totals. For example, Virginia State Parks' visitation records indicate yearly totals have more than doubled from 4.4 million visitors in 1994, to over 10 million in 2016 (VDCR, 2017). Though beneficial, concomitant with rapid tourism growth is the potential for higher rates of crime and, in the case of parks or national forests, an uptick in the presence of urban-associated street crimes (Eliason, 2014; Park & Stokowski, 2009; Tynon, Chavez, & Kakoyannis, 2001).

Consequently, natural-resource agencies have been increasingly expected to address this by expanding the scope of conservation officers' jobs to include enforcing *all* state and federal laws. This is contrary to past practices, which largely focused on the prevention of fish and wildlife violations (Eliason, 2014; Sherblom, Keranen, & Withers, 2002; Weisheit, Falcone, & Wells, 2005). Further, these additional duties are not typically accompanied with an increase in resources or personnel to meet demands (Falcone, 2004; Tynon et al., 2001). The most recent census on state and local law enforcement agencies (conducted in 2008) revealed that some 15,000 conservation officers are employed by 246 agencies throughout the United States (Reaves, 2011). These officers are often tasked with patrolling large geographic areas. For example, Virginia—according to the 2008 census—employed 160 conservation officers to cover

nearly 127,000 acres of state park lands; a rate of about one (1) officer per 793 acres (Reaves, 2011; VDCR, 2017).

Though increased tourism can function to bolster rural economies (see e.g., Bergstrom, Cordell, Ashely, & Watson, 1990; Gartner, 2004), interviews with conservation officers reveal that, in comparison to local residents, visiting recreationists' behavior is often more unpredictable and can pose a greater threat to officer safety (Patten & Caudill, 2013). The confluence of recreational growth and problematic behavior from visitors may perhaps be taking a toll on conservation officers, as many have expressed discontent with their increased enforcement load (Eliason, 2014, 2016). In part due to inherent dangers presented to officers, research is ubiquitous in its assertion that policing is one of the most stressful occupations (Aaron, 2000; Beehr, Johnson, & Nieva, 1995; Eliason, 2006; Toch, 2002; Violanti et al., 2018; Waters & Ussery, 2007). For example, Southwick (1998) revealed that police officers are ten times more likely than the general public to be physically assaulted. More recent data indicates that Southwick's (1998) findings have held constant, as in the last ten years the average number of assaults on police has totaled nearly 60,000 per year, with nearly one-third of assaulted officers being seriously injured (Violanti et al., 2016).

Specific to the field of conservation policing, Carter (2004) found that, on a per-citation basis, game wardens were three times more likely to be assaulted by a weapon of any kind and seven times more likely to be assaulted by a perpetrator with a firearm or knife than traditional state police. Furthermore, his research revealed that 68% of use of force incidents by or against conservation officers occurred when they were conducting some type of general law enforcement duty and not enforcing wildlife laws. Thus, assaults occur more often when officers are conducting duties related to general policing, like enforcing drug laws, answering domestic

violence calls, and serving warrants. As stated previously, research suggests that conservation officers have expressed dissatisfaction with this recently fashioned aspect of their occupation, likely due in part to increased risk.

Though significant attention has been directed at understanding police stress in general, only a handful of studies have assessed perceived stress among conservation officers (e.g., Eliason, 2006; 2014; 2016; Oliver & Meier, 2006; Walsh & Donavon, 1984). Further, only two of these works have examined stress quantitatively, and none have addressed the relationships between officer characteristics, general policing or conservation-specific duties, and self-reported stress levels. Nor have any attempted utilizing a general police stress questionnaire to examine reported stress levels among a cohort of conservation police. The current study seeks to fill these gaps in the literature by examining the role that officer characteristics and commonly-performed duties play in conservation officer stress through primary data collection and the utilization of McCreary and Thompson's (2006) police stress scale. Such an approach is beneficial both due to the lack of previous research in the area and the realization that the occupational duties of conservation officers are changing (e.g., Falcone, 2004; Patten, 2009; Sherblom et al., 2002). The remainder of this chapter seeks to provide an overview of conservation policing (and research related to it), in addition to further discussing the study's attempt to provide insight into stress among officers employed by these organizations.

Conservation Policing

Though the broadening of responsibilities bestowed upon conservation police is a relatively recent phenomenon, the idea of conservation policing can be traced to 17th Century England (Munsche, 1981). During this time, conservation officers were referred to as gamekeepers, and their primary responsibility was enforcing England's game laws. Because the

most common offense was poaching, England would oftentimes employ arrested poachers as gamekeepers under the philosophy of “set a thief to catch a thief” (Munsche, 1981, p. 82). The proliferation of sportsman’s clubs throughout the northeastern United States—soon after gaining independence—necessitated the establishment of similar wildlife regulations in this country, including the creation of “hunting seasons” (Brown, 2007). Members of these clubs were often wealthy, and they sought to protect their dominion over wildlife by personally suing individuals who infringed upon controlled lands. Though this method would prove to be effective for some time, states began to consider more formal measures to achieve these goals. As a result, Maine became the first state to employ an official game warden in 1852 (Brown, 2007).

It would not be until after 1880, however, that other states would begin to follow suit. Taking a comprehensive approach, these states employed game wardens in combination with establishing bag limits, defining hunting seasons, and protecting certain species of animals (Dunlap, 1988). The increasing complexity of state wildlife laws and enforcement agencies first began attracting the attention of researchers in the mid-1900s, as they sought to better explain their role and implementation (Wing, 1943). For example, Wing (1943) conducted the first voluntary census of all state agencies employing wildlife officers, revealing that nearly 5,600 were employed in the profession at the time and that primary qualifications included a wildlife-focused education, vast knowledge about various species of wildlife, and other biological expertise (Wing, 1943).

Later scholars, (e.g., Chapman & Hartman, 1962; Morse, 1973) recognized the expansive role of conservation officers in their respective states, contending that the power of a conservation officer exceeded that of more traditional police. Morse (1973) further posited that conservation officers would eventually be required to perform general policing functions based

upon the budgetary concerns that were emerging at the time. This prediction has been validated by more recent research, as investigators have identified a visible shift in responsibilities doled out to conservation police officers. Specifically, the profession has transitioned from a primarily isolated and autonomous occupation focused on enforcing wildlife, hunting, and game laws to one focused on a more general law enforcement role (Falcone, 2004; Shelley & Crow, 2009; Sherblom et al., 2002). This is partially due to the fact that small, rural agencies have begun to increasingly rely on state resources to aid in drug enforcement, serving warrants, and combatting criminality overall (Weisheit et al., 2005). Research has revealed that federal agencies now rely on state-level departments as well (including conservation agencies) to aid in efforts predicated on the interests of homeland security (Carter & Gore, 2013).

The added responsibility placed upon conservation officers corresponded (as previously mentioned) with the increased popularity of public parks at both the state and federal levels. Falcone (2004) postulated that the confluence of the automobile and a fully-developed interstate infrastructure in the mid-1900s allowed remote areas to be more accessible than ever before; thus, individuals who had a plethora of discretionary time could exercise it to visit previously unreachable recreational sites. Despite the influx of eager recreationists, conservation agencies often maintained a static number of enforcement personnel, leading to issues related to resources and manpower. For example, Tobias (1998) estimated sportsmen to outnumber conservation officers 10,000 to 1 near the end of the 20th Century.

Modern conservation policing agencies are therefore left to police large geographical areas with relatively limited resources (Falcone, 2004). In order to accommodate recreational visitation growth without allocating more resources, states have begun to absorb conservation police under larger state-level natural resource agencies, leaving conservation officers with the

responsibility of enforcing a wide range of federal and state laws on managed property (Falcone, 2004). This transition has been found to frustrate both agencies and their officers, as the push to consolidate, further bureaucratize, and transform conservation agencies is not always well received by stakeholders (Sherblom et al., 2002).

More recently, Patten, Crow and Shelley (2015) sought to ascertain the current status of the changing enforcement roles of conservation officers by examining official titles for these officers and the stated mission of their departments. Their findings identified an overall trend towards adopting a generalized policing framework and wide variability in official titles. More importantly, they found that nearly one-third of departments did not require some type of specialized training related to fish and wildlife enforcement, suggestive of the move to a more general approach to law enforcement.

The large majority of states now require conservation officers to attend traditional law enforcement academies and not a specialized training course related to fish and wildlife laws (Patten, Crow, & Shelley, 2015). Further, only 31 states require officers to undergo specialized wildlife-conservation training beyond the initial academy. Taken collectively, it appears that conservation officers who were once tasked with protecting wildlife and enforcing associated laws have begun to shift towards an identity that prompts them to perform multiple roles. It seems logical that this transition may play a role in influencing the level of stress felt by impacted officers, prompting the need for continued research in the field.

Current Study

The current study is designed to address this need for continued research in three key ways. First, it seeks to quantitatively assess levels of duty-related (inherent) stress among a sample of conservation officers via utilization of McCreary and Thompson's (2006) police stress

scale (PSQ-Op). Though many attempts have been made to understand stress among general law enforcement officers, only a handful have dedicated attention to conservation policing. Further, these have largely taken a qualitative approach, eschewing reliance upon quantitative scales that may provide a more objective and generalizable understanding of the issue. Second, the study seeks to determine whether officer characteristics (e.g., age, education, length of service), factors commonly found to influence police stress, serve to condition levels of stress among conservation officers. Finally, and in light of changing job descriptions (as discussed above), the work explores the relationship between levels of stress and the tasks that officers are asked to commonly perform in order to determine whether more generalized mandates relate to an increase in perceived stress.

Chapter Summary

This chapter sought out to introduce the field of conservation policing and discuss its transition from a focus on fish and wildlife laws to one concerned with more general law enforcement responsibilities. In addition, it discussed the potential for this evolution to impact the amount of stress felt by individuals employed as conservation officers, and provided a brief overview of the goals of the current study. Chapter Two will serve to introduce the literature pertaining to general police stress and stress within smaller, rural departments. In addition, it will highlight the limited research relating to stress and job satisfaction among conservation officers, before introducing the hypotheses associated with the current study. Chapter Three will address the study methodology, including a discussion of the survey instrument, sampling strategy and statistical models used to test the established hypotheses. Chapter Four will introduce the results from computed analyses, while Chapter Five will serve to further explain the relevance of those findings and how they contribute to extant literature.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

As discussed in the previous chapter, the current study is designed to explore levels of stress among those employed in the field of conservation policing and how various factors may work to condition them. This chapter serves to provide an overview of the police stress literature, moving from a broad focus on general stress to a more focused discussion of the limited research relating to stress among both rural police and conservation officers. In addition, it addresses the individual-level characteristics that have been found to influence the degree to which officers perceive an event as stressful (e.g., race, gender, level of education) and considers potentially unique factors that may contribute to stress among individuals employed in rural settings (e.g., the inability to separate professional and personal roles). Finally, it highlights gaps in the conservation policing literature and provides an introduction to the hypotheses associated with the current work.

Stress in Policing

Modern interpretations of stress view it as a transaction between a person and their environment (Lazarus, 1999). In this approach, individuals undergo a process through which they make appraisals of whether a given situation is “about to tax individual resources, thus threatening well-being” (Dewe et al., 2012, p. 26). Though generalizable to individuals employed in a variety of fields, this framework has been used by various researchers to explore stress among police officers. According to Stinchcomb (2004), stress most often manifests when officers are presented with a scenario that places on them demands that supplant their ability to meet or cope with them.

This appraisal or transaction often requires a timely reaction from officers who must quickly consider their options for coping with—or more broadly, simply handling—situations. The inability to adequately do so can result in immediate (e.g., traumatization, shock, etc.) or long-term (e.g., chronic physiological or psychological conditions) consequences (Dewe et al., 2012; Lanterman et al., 2010; Lazarus, 1999). The research literature has generally asserted that policing is one of the most stressful occupations in the world (Aaron, 2000; Beehr, Johnson, & Nieva, 1995; Eliason, 2006; Toch, 2002; Violanti et al., 2018; Waters & Ussery, 2007). To better understand the phenomenon, scholars have focused on examining stress among officers and discerning whether any individual-level or job-related characteristics serve to influence levels of it (Reiser, 1974; Selye, 1978).

Findings from these studies have revealed that two broad forms of stress exist among officers and the departments that employ them: organizational stressors (related to interdepartmental interaction and bureaucracy) and inherent (or duty-related) stressors (Aaron, 2000; Toch, 2002; Violanti & Aron, 1993; Violanti & Aron, 1995). Organizational stress principally stems from the structure of a police department and its daily operations (Toch, 2002; Violanti & Aron, 1993; Violanti & Aron, 1995; Waters & Ussery, 2007). Shane (2010) suggests that this stress emanates from various interdepartmental sources (e.g., superiors, task assignments, policies and procedures) and that organizational stressors can be especially burdensome because they are viewed as inescapable. Put differently, officers must encounter superiors, peer officers, and bureaucratic restraints (e.g., oversight, rules, regulations, etc.) on a daily basis.

Inherent stressors, on the other hand, are defined as “events normally happening within police work that have the potential to be psychologically and physically harmful to officers”

(Dowler, 2005; p. 477). Though, to a degree, inherent stressors can appear as similar to organizational stressors, they differ in that they emanate both from events or situations typically encountered by police in the field and from the intrinsic demands of policing (Chae & Boyle, 2013; Hickman et al., 2011). More specifically, inherent stressors can include components of police work that range from interacting with citizens who have been injured or who are in distress, to violent conflicts, marital and familial issues, and even the debilitating effects of shiftwork (Beehr et al., 1995; Waters & Ussery, 2007).

Encompassing two components, inherent stress can manifest due to acute or chronic stressors (Dewe et al., 2012; Hickman et al., 2011). Acute police stressors are those events that occur suddenly, “and which provoke an almost immediate psychological reaction” (Dick, 2000, p. 226). Examples of acute, inherent stressors may include shootings or arresting a violent individual (Anshel, Robertson, & Caputi, 1997). Chronic stressors refer to repetitive aspects of policing that officers perform the most, like shiftwork or continual response to calls-for-service, often with little background information on the situation (Hickman et al., 2011; Martinussen, Richardsen, & Burke, 2007). Over time, chronic stressors can compound and precipitate occupational burnout in addition to negatively impacting both an officer’s health and their commitment to their respective policing agency (Jaramillo, Nixon, & Sams, 2005).

Scholarship largely recognizes that inherent (or duty-related) stressors do not occur as frequently as do organizational stressors—which are typically chronic (i.e., trivial stressors that occur frequently but which are minor in magnitude) in nature (Lantermann et al., 2010). However, when officers do experience unpredictable, high-stress interactions in the field, it can be traumatizing (Chae & Boyle, 2013; Lantermann et al., 2010). For example, one officer interviewed by Peak (2009) stated that police work sometimes is comprised of, “eight hours of

boredom interrupted by five minutes of terror” (p. 133). Chae and Boyle (2013) characterized these high-stress situations as being particularly traumatic, owing to “extended periods of inactivity and boredom punctuated by emotionally intense experiences of potential trauma and fear” (p. 93).

Inherent stressors often have the greatest impact on officers during sudden, volatile moments when the officer transforms from a state of peace to a fight-or-flight response; moreover, subsequent recalling (after settling down, or even days later) of a high-stress event often follows and serves to exacerbate the issue (Chae & Boyle, 2013; Crank, 2004; Henry, 2004). Additionally, though officers encounter inherent stressors less often, research suggests that the constant belief that an officer will *potentially* encounter danger on any given shift is associated with higher levels of stress and symptoms of depression or anxiety (Cullen, Link, Travis, & Lemming, 1983; Henry, 2004; for a more general discussion of this see also, McEwen, 1998). Cullen et al. (1983) further identified that officers do not have to actually experience a dangerous situation to suffer the physiological and psychological effects of perceived stress (the mere possibility of occurrence is sufficient).

Several researchers have sought to explore the existence of physical evidence supporting high levels of stress among officers (Anderson, Litzenberger, & Plecas, 2002; Hickman et al., 2011). For example, Anderson et al (2002) found that officers’ heart rates were an average 22 beats higher than their resting heart rate while on duty—even without experiencing a high-stress situation. Heart rate was highest immediately before and during a critical incident (an acute stressor), which typically included some type of physical confrontation. Moreover, once officers experienced a critical incident, their heartbeat remained elevated (above the already 22 beats over resting rates) until, and likely after, their shift ended (Anderson et al., 2002).

To better understand perceptions of stress among individual officers, Violanti and Aron (1993) conducted a survey of 103 officers in New York, inquiring about the aspects of policing they believed to be most stressful. Their findings indicated that when officers reported higher levels of job satisfaction, they often reported lower levels of distress. However, the presence of an inherent stressor still maintained a negative impact on the interaction between higher levels of job satisfaction and lower levels of distress. In addition, the researchers sought to capture officer perceptions of events they deemed most stressful when performing traditional law enforcement functions. Relying on a scale containing over sixty items—focused on both organizational and inherent stressors—officers ranked several inherent stressors as producing the highest perceived stress. These included killing someone in the line of duty, experiencing the death of another officer, suffering a physical attack, and seeing or comforting a battered child (Violanti & Aron, 1995). Their findings also indicated that those with less experience (six to ten years) had higher mean stress scores for each of the above items, while officers who had more experience indicated that organizational stressors (e.g., a lack of rewards, second-guessing by superiors) were more taxing.

Robinson, Sigman, and Wilson (1997) further explored the relationship between duty-related stressors and psychological or physiological manifestations of stress among 100 suburban police officers in Ohio. Officers in this study exhibited high levels of stress when they experienced exposure to death (e.g., car crashes, shooting victims, etc.), which was especially apparent among those with less than eleven years of experience (Robinson et al., 1997). Additionally, and most pronounced for officers with less experience, repeated exposure to traumatic experiences increased the likelihood of an officer developing varying degrees of hyperarousal.

More recently, Violanti et al. (2016) found that officers consistently rated violent encounters as the most stressful job-related experiences. Many of those in their sample noted that events involving children or familial disputes (i.e., domestic violence) were highly stressful and took longer to cope with in comparison to similar incidents involving only adults. In addition, tasks that required officers to work on their days off (e.g., court appearances, depositions, etc.) were also linked to elevated stress levels, which was especially apparent among male officers (Violanti et al., 2016). Fyfe (1980) also identified dissonance experienced by off-duty officers who—due to either departmental policy or self-protection—carried their guns, badges, and other implements which served as a constant reminder to be vigilant and prepared to intervene in escalating situations at any time (thus increasing stress levels overall).

Supportive of Violanti et al.'s work (2016), the bulk of recent scholarship suggests that physical confrontations are generally rated among the most stressful situations facing officers, (Hickman et al., 2011; Korre, Farioli, Varvarigou, Shato, & Kales, 2014; Violanti, et al., 2016). However, it is also important to consider how demographic characteristics may condition perceived stress and responses to it. These characteristics, and the research relating to them, are covered next.

Demographic Influences on Police Stress

Research concerning stress within policing has increasingly concentrated on the influence of gender in recent years (He, Zhao, & Archbold, 2002; He, Zhao, & Ren, 2005; Morash & Haarr, 1995; Morash, Kwak, & Haarr, 2006; Violanti, et al., 2016), with a specific focus upon how stress may be perceived differently among male and female officers (Wexler & Logan, 1983). For example, Kurtz (2008) found that female officers had higher overall levels of stress than their male counterparts, a result in line with other studies of this nature (Chae & Boyle,

2013; He, et al., 2002; Sousa & Gauthier, 2008; Toch, 2002). This phenomenon exists in spite of the fact that female officers have been found to be less likely to confront violent situations or to arrest violent suspects (Violanti et al., 2016). In addition, male officers have regularly reported lower levels of stress when dealing with tragic situations, in relation to feeling responsible for the wellbeing of fellow officers, and when called upon to use force (Bartol, Bergen, Volckens, & Knoras, 1992; Horne, 2014; Violanti et al., 2016).

Sousa and Gauthier (2008) assert that female officers may find tragic situations to be more stressful because they are often pulled from assignments that involve a higher probability of violent confrontations and then reassigned to deal with familial disputes or less serious crimes. Thus, their stress levels in violent situations could in part be attributable to general inexperience resulting from a lack of opportunity. With that said, Gatcher, Savage, and Torgler (2011) found that as female officers aged, perceived stress levels began to fall. Thus, it appears that younger female officers experience stress at higher rates. This is in direct contrast to previous indications of a curvilinear structure of police stress distributed across the male population, which is lowest in young male officers, peaks with middle-age, and lowers again once officers near retirement (Kurtz, 2008; He, et al., 2005).

Attributable in part to elevated levels of stress among female officers during physical confrontations, research suggests that they are much less likely to use force than their male counterparts (Schuck & Rabe-Hemp, 2007). Additionally, female officers are less likely to receive citizen complaints or to be involved in lawsuits prompted by excessive use of force (Schuck & Rabe-Hemp, 2007; Violanti, et al., 2016). The gendered distinction as it pertains to perceived stress in policing becomes blurred, however, when acknowledging the fact that male and female officers often employ similar coping mechanisms (Haarr & Morash, 1999). As such,

it is important to explore the potential for other demographic characteristics to further influence stress and the management of it. For example, Haarr and Morash (1999) suggest that though some degree of interaction exists between gender and perceived stress, officer race also plays an influential role.

Race. Recent demographic shifts in policing have resulted in higher minority employment across departments nationwide (Reaves, 2015; Sklansky, 2006). More specifically, Reaves (2015) revealed that, in 2013, minority officers comprised 27% of the nation's police population, a number that has almost doubled since 1987. It should be noted, though, that larger, urban departments (e.g., New York, Detroit) have led this movement, while others have lagged behind (Sklansky, 2006). Nevertheless, it is still important to consider how departments have adapted to their recent and rapid diversification and, perhaps of more salience, how minority officers' experiences in law enforcement differ in terms of perceived stress.

In measuring levels of anxiety, depression and somatization, He, et al. (2005) found key differences between White and Black male officers. More specifically, they found that White male officers reported a higher number of predictors for depression, anxiety, and somatization (see also, Hawkins, 2001). These differences did not exist between White female officers and Black female officers (He et al., 2005). Overall, Black male officers experienced the least amount of stress, whereas White female officers experienced the most (He, et al., 2005). Violanti and Aron (1995) found that minority officers often perceived inherent stressors as less stressful than organizational stressors, which is a finding largely echoed in the literature (e.g., Dowler, 2005; Haarr & Morash, 1999; Morash et al., 2006; Toch, 2002). This may be in part because minority officers are placed on day-shift more often than their White, male counterparts, which

typically entails a lower probability of dangerous encounters (He et al., 2005; Korre et al., 2014; McCarty, Zhao, & Garland, 2007; Morash et al., 2006; Violanti & Aron, 1995).

Taken as a whole, the above findings indicate the existence of a relationship between race and perceived stress. It is important to note, however, that caution should be employed when interpreting these findings. Most researchers discuss the relationship's relatively weak role in comparison to other predictors (e.g., He et al., 2005). This is potentially reflective of the fact that increased representation of minorities in policing is a relatively recent phenomenon; therefore, observing the true effects of race on stress may be more possible with the passage of time (Sklansky, 2006; Webster, 2013).

Education. In addition to gender and race, the impact of education has been well-explored within the police stress literature (Aaron, 2000; Chae & Boyle, 2013; Eliason, 2006; He, et al., 2005; Lanterman, et al., 2010; McCarty, et al., 2007; Violanti & Aron, 1995). Findings are somewhat mixed, as some researchers have established a link between the two, while others contend that it is not overly influential. Supportive of the link, Cullen et al. (1983) found that higher levels of education were associated with lower levels of job-related stress, controlling for other relevant factors. Crank, Regoli, Hewitt, and Culbertson (1993) reached similar conclusions, finding that police administrators with lower educational attainment claimed higher levels of perceived stress (in comparison to those who had higher-level degrees). More recent studies have also revealed that education may have a mitigating effect on perceived stress (Gershon et al., 2009; Morash, et al., 2006). In addition, it also appears that officers who have higher levels of education are better able to cope with threatening situations, potentially reducing the perceived severity of a stressor (Kakar, 1998).

Contrary to these findings, some research has indicated a weak, nonexistent or opposing influence of education on stress within the field (Newman & Rucker-Reed, 2004; Storch & Panzarella, 1996). For example, Storch and Panzarella (1996) found no relationship between education and reported levels of stress or anxiety among a sample of line officers. Moreover, Violanti et al. (2006) found (relying on a cohort of officers in Buffalo) that education produced a weak effect on predictors of stress (operationalized as symptoms of PTSD) when included in a model with other control variables. In sum, similar to race, it appears that education has some impact on stress levels among police, though its effect may vary by officer type.

Prior Military Service. In addition to demographic characteristics, researchers have also explored how lived experiences influence the perception and management of stress among officers. In recent years, increased militarization has influenced virtually all aspects of policing. In addition to a tiered rank and command system, the use of high-tech body armor, weapons, and even similar apprehension tactics—such as no/quick-knock raids—are common to agencies nationwide (Kraska, 2007; Kraska & Kappeler, 1997; Hartley, Violanti, Mnatsakanova, Andrew, & Burchfiel, 2013). Though potentially problematic, it has been hypothesized that this shift may serve to facilitate the transition of those with prior military experience to policing roles. Put differently, prior military experience may potentially enhance one's ability to process high-stress situations and offer officers the ability to better cope than those who lack this experience (Andrisani, 1991; Hartley et al., 2013; Wright, Mengyan, & Greenback, 2011). With that said, there exists little consensus (within the literature) on how prior military experience affects officers; in fact, the relationship is still largely unexplored (Hartley et al., 2013; Patterson, 2002)

A handful of studies have found no discernible difference among the two groups (He et al., 2005; Patterson, 2002; Wright et al., 2011). For example, Patterson (2002) found that among

both officers with prior military experience and officers without it, little variation existed regarding perceived stress associated with aspects of policing and police-public encounters. This finding was echoed by He et al. (2005) in their examination of responses provided by sworn officers in Baltimore. Their results revealed that military service had no statistically-significant impact on the propensity for individual officers to report various stressors pertaining to their occupational role.

Conversely, Ivie and Garland (2011) found that officers with prior military experience exhibited less stress when confronted with particularly gruesome crime scenes, volatile street encounters, and other heightened situations. Further, exposure to potentially traumatizing critical incidents only affected those officers that did not have prior military experience. In light of those findings, Ivie and Garland (2011) asserted that military experience must instill emotional resilience that functions to mediate the degree to which officers experience stress.

Hartley et al. (2013) posited that contradictory findings could be explained by the fact that previous studies did not consider whether those with prior military experience were engaged in combat while serving. The researchers found that officers who had no prior military experience rated inherent police stressors higher (more problematic) than their veteran counterparts. More specifically, when considering the frequency of encountered events and stress, those with combat experience reported the lowest level of stress, as compared to those who served in non-combat roles (Hartley et al., 2013). It is possible that this finding relates to the adoption of more effective coping strategies for veterans who have previously experienced violent and/or traumatic situations (Hartley et al., 2013).

Family and Social Support

Inherent stressors can also include aspects related to the nature of law enforcement that extend beyond an officer's shift. For example, the presence of work-family conflict or a lack of adequate means for socialization can accelerate officer burnout, lead to low rates of job satisfaction, and/or serve as a catalyst for reliance on maladaptive coping strategies (Hall, et al., 2010; Martinussen, et al., 2007; Rashmi & Nayak, 2015). Inherent stressors that can interrupt home-life stability generally include the varying and lengthy shifts required of the job and an officer's family worrying about whether they will return safely from duty (Waters & Ussery, 2007; Youngcourt & Huffman, 2005). These stressors, emanating from an officer's home life and related to the intrinsically demanding nature of the job can further compound and contribute to their overall stress levels (Waters & Ussery, 2007).

Work-Family Conflict. Adams, King, and King (1996) state that a "work-family conflict arises when demands of participation in one domain are incompatible with demands of participation in the other domain" (p. 412). That is, when the demands of policing begin to spill over into the family realm, conflict can arise (Hall et al., 2010). Taking a general approach applicable to traditional police agencies, Jackson and Maslach (1982) inquired about the relationship between job burnout (due to associated demands) and quality of family life among both officers and their spouses. Wives reported that husbands who returned home emotionally exhausted brought with them elevated levels of tension and anxiety, in addition to an inability to sleep. Furthermore, wives of emotionally exhausted officers reported to be less content with their marriages and claimed that they had fewer friends to socialize with because officers preferred to depersonalize from potential clientele (Jackson & Maslach, 1982).

Depersonalization can damage the robustness of the stress-mediating social and familial support that officers need to adequately cope, thus causing them to resort to potentially maladaptive coping strategies like alcohol use and isolation (Beehr et al., 1995; Jackson & Maslach, 1982; Hall et al., 2010; Waters & Ussery, 2007). Supportive of this notion, Martinussen et al (2007) found that those officers who reported an abundance of work-family pressures and who indicated they had lower levels of social support experienced higher levels of emotional exhaustion. Such findings suggest that officers who have to balance more roles (e.g., father/mother, husband/wife, police/citizen) experience role overload, which can translate into intrapersonal emotional burnout and/or stress (Martinussen et al., 2007).

The effects of work-family conflict can also serve to negatively impact officer performance (Boles, Howard, & Donfrio, 2004, Martinussen et al., 2007). For example, Howard et al. (2004) found that when officers experience greater levels of work-family conflict, their job satisfaction and individual efficiency and output were hindered. The researchers attributed the bulk of such stress to role conflict, in that officers often join the force to fight crime and make a difference, yet they spend most of their time performing more mundane service activities. This lack of excitement and role conflict is then carried home in the form of stress that can escalate to inter-familial conflict (Howard et al., 2004; Lawton, Hickman, Piquero, & Green, 2000). In light of this assertion and the previous discussion, it appears the demands of policing not only affect individual officers, but can also spillover into home life and damage critical means of social support that function to mediate stress.

Marital Status. In conjunction with other demographic characteristics, studies of police stress often assess the role of marital status due to its potential to either act as a source of social support or to bring about added stress (Beehr et al., 1995; Hawkins, 2001; Tsai, Nolasco, &

Vaughn, 2017; Zhao, He, Lovrich, & Cancino, 2003). The impact of marital status on levels of stress, similar to both race and prior military experience, has received somewhat mixed support (Aaron, 2000; Hawkins, 2001; Zhao et al., 2003). For example, Aaron (2000) found that, when controlling for other demographic characteristics, marital status shared no statistically-significant relationship with levels of officer stress. Zhao et al. (2003), however, found marital status to have a marginal impact on stress levels overall. Officers indicated that when the effects of their work began spilling over into their personal life (i.e., when it begins reducing the amount of time available to spend with their family), it substantially increased their stress levels. Some researchers have pointed to the importance of realizing that male officers are more likely to be married than their female counterparts when assessing stress (Pole, et al., 2001; Violanti et al., 2016). The previously discussed finding that female officers tend to experience higher levels of stress (see e.g., Kurtz, 2008) may offer further support for the notion that a supportive marriage can function to lessen the negative effects of encountered stressors.

Though this section has examined the literature as it pertains to the relationship between stress and individual-level characteristics, it is important to recognize that most of the cited works have relied upon samples obtained from urban police agencies. Because department size, and the corresponding degree of isolation associated with it, may also influence perceived stress and coping mechanisms, it is important to provide an overview of research relating to more rural agencies (Brooks & Piquero 1998; Maran et al., 2015; Morash et al., 2006; Scott, 2004; Violanti, Mnatsakanova, Hartley, Andrew, & Burchfiel, 2012). This is of unique importance to the current study due to the rural nature of conservation police work (Falcone, 2004; Oliver & Meier, 2004; Weisheit et al., 2005) and serves as the focus of the discussion that follows.

Stress and Rural Policing

A limited number of studies have focused on the influence that department size has upon the types and frequency of stressors experienced by officers (Brooks & Piquero, 1998; Scott, 2004). It is generally assumed that officers in large departments, which experience higher rates of crime, are exposed to more potential *stressors*. This term is emphasized because mere exposure to stressors does not necessarily translate to internalized stress, as it is also a function of one's perception of a situation (i.e., officers do not have to actually experience a stressor to exhibit symptoms of stress) and not simply an actuality (Cullen et al., 1983; Brooks & Piquero, 1998; Scott, 2004).

Though rural officers may experience fewer stressors, inquiries into their unique problems is merited due to the fact that small departments constitute a significant portion of police agencies nationwide (Reaves, 2015). In 2013, for example, 48% of all police departments were comprised of less than 10 officers, with nearly 12,000 agencies located in communities of fewer than 50,000 individuals (Reaves, 2015). More specifically, nearly 60 million individuals live in communities that the U.S. Census Bureau (n.d.) defines as distinctly "rural" in nature. Eliminating these communities (and their officers) from research relating to police stress would serve to provide only a partial understanding of the issue. The following section serves to provide a basic understanding of policing in the rural context before transitioning to a review of the literature on stress among rural officers.

Policing Rural Communities

Rural law enforcement is relatively complex from a jurisdictional standpoint, as both municipal agencies and county sheriff's departments play integral roles in the administration of justice (Weisheit et al., 2005). Furthermore, state agencies are typically more involved in rural

communities than in more populated locales. These agencies assist with general policing functions, target emerging problems (e.g., drug production and distribution) and participate in wildlife law enforcement (Falcone, 2004). In addition, they help complement local departments who lack the resources necessary to effectively manage the crime problems that they face.

The focus of law enforcement tends to differ based upon agency size, with Meagher (1985) suggesting that smaller agencies may be more concerned with crime-prevention tasks, while moderate-sized agencies are principally focused on service-related tasks and large agencies occupied with enforcing criminal law. Rural agencies may also be expected to perform an array of general human service functions (e.g., emergency medical, firefighting) due to their generalist mandate. Additional research suggests that rural officers must be able to provide human services because the nearest available resources are not easily accessed, and officers serve as the first point of contact for most individuals in need (Payne, Berg, & Sun, 2005; Weisheit et al., 2005)

One unique distinction within the research literature is the revelation that rural officers find it difficult—if not impossible—to differentiate between their social and professional identities (Liederbach & Frank, 2003; Weisheit et al., 2005). For example, Liederbach and Frank (2003) revealed that, outside of traditional law enforcement duties, sampled officers also conducted routine house checks for citizens and even provided transportation when asked. Further, they found that in one-third of all sampled police-citizen interactions, the individual knew the officer on an informal (i.e., personal) basis (Liederbach & Frank, 2003).

Sanders (2010) suggests that rural police administrators characterize a good officer as one who understands, "...our business is to serve the community, not just chase law breakers" (p. 129). This requirement typically extends beyond prescribed duty hours due to the small size of most rural departments, leaving officers easily identifiable and reachable by the public (Sanders,

2010; Weisheit et al., 2005). Further, the vast jurisdictions typically covered by rural departments geographically diffuses their small police force; thus, rural officers regularly work in isolated conditions and are compelled to resolve issues and make discretionary decisions independently of assistance from their coworkers (Weisheit et al., 2005). Taken together, rural police are required to be on the clock at virtually all hours while at the same time lacking readily-available support from their coworkers.

Geographic isolation, in addition to hindering efficiency, can also function as a source of stress for rural officers who are constantly aware of their lack of backup (Huey & Ricciardelli, 2015; Sanders, 2010; Websdale, 1995; Weisheit et al., 2005). Isolation may entail added danger, especially in volatile domestic situations that lack predictability (Pattavina, Buzawa, Hirschel, & Faggiani, 2007; Wood, Rosay, Postle, & TePas, 2011) . It has further served to present rural offenders with unique opportunities, including the production of drugs (Weisheit & Brownstein, 2016). Rural police have been asked to direct their attention to the growing drug problem (e.g., methamphetamine and marijuana production) pervading both the rural countryside and government-owned lands in recent years (Hafley & Tewksbury, 1995; Weisheit & Brownstein, 2016; Weisheit et al., 2005). Research related to fear among officers in smaller departments has found that drug crimes are rated as one of their top concerns (Kuhns, Maguire, & Cox, 2007; Schaefer, Burruss, & Giblin, 2009).

How an officer perceives their environment and responsibilities plays a pivotal role in whether they feel that they are, “about to tax individual resources...” or, experience stress (Dewe et al., 2012, p. 26). As previously discussed, the bulk of research on police stress has focused upon urban departments and the likelihood that officer characteristics/experiences influence the degree to which they will perceive an incident as stressful (Cullen et al., 1983; Chae & Boyle,

2013). This is problematic, as significant differences exist between rural and urban departments (Bergstrom, et al., 1990; Meager, 1985; Pattavina et al., 2007) in relation to structure, types of offenses encountered (e.g., Payne, et al., 2005; Weisheit & Brownstein, 2016; Weisheit et al., 2005), and the expansive, and sometimes inextricable, personal and professional roles that a rural officer is expected to perform (e.g., Woldoff, et al., 2016). Given these differences, it is necessary to explore the limited literature pertaining to rural police stress.

Rural Police Stress

Pioneering the study of stress in rural departments, Sandy and Devine (1978) identified four factors that were unique to rural patrol: security, social factors, working conditions, and inactivity. Based upon themes drawn from officer interviews, the researchers contended that security involved the isolated conditions officers found themselves in, as they were typically alone and in contact with armed individuals. Social factors facing a rural officer were those involving the inextricable link between personal and professional roles, as citizens likely knew officers in an unofficial capacity because of the close-knit communities they occupied. Concerns regarding working conditions included low salaries, the inability to train due to a lack of resources, and limited potential for promotion. Lastly, inactivity functioned as a source of stress that manifested from boredom.

Though Sandy and Devine (1978) provided initial insight on stressors facing rural departments—and sparked interest in the topic—they offered little analysis or data to substantiate their assertions. It would not be until Oliver and Meier (2004) reexamined these assertions using data from policing agencies across West Virginia that all four factors would be tested to ascertain their validity. Their results indicated that, similar to urban departments, race, gender, and police experience were related to perceived stress levels. More distinctive to rural

areas, officers who indicated feelings of isolation and the lack of nearby back-up reported higher levels of stress. Moreover, officers who experienced internal conflict due to feelings of inadequacy (i.e., boredom due to inactivity) also reported higher stress levels (Oliver & Meier, 2004).

Scott (2004), sampling small-town policing agencies in Pennsylvania, found that some aspects related to policing in rural areas served to increase stress levels. Most notably, officers who were married, or had families, rated incidents involving children (e.g., child abuse) to have a depreciable impact on both their professional contentment and family life. Moreover, when administrative change was viewed as disruptive (i.e., changing routine procedures, practices, or duties), stress levels emanating from inherent aspects of policing, like work schedules, paperwork and/or assigned duties increased. Officers also emphasized both individual and familial effects resulting from media criticism. This was largely due to officers' inability to function in their often tight-knit communities without widespread recognition of their role as a police officer (Liederbach & Frank, 2003; Scott, 2004; Weisheit et al., 2005).

Despite the rural environment posing simultaneous advantages and disadvantages for those who police it, small departments tend to lack resources necessary for helping officers alleviate the effects of high-stress situations, or stress in general (Page & Jacobs, 2011; Oliver & Meier, 2009). As such, sources of social support—which typically function to reduce stress—outside of family and friends are sparse. Page and Jacobs (2011), for example, found that among rural and small-town departments in Oklahoma, only 12% reported having resources available to assist with stress management. Further, 71% of officers in their sample preferred discussing stressful events with a colleague rather than seeking professional help. Similar findings have emerged from other works, with officers discussing the importance of avoiding discussion of

negative experiences in order to create separation between their private and professional lives (Page & Jacobs, 2011; Scott, 2004).

By virtue of varying departmental goals, it is also clear that rural locales require county- and state-level agencies to provide a high level of assistance (Meagher, 1985; Weisheit et al., 2005), with conservation officers constituting one of the more important resources available to them. In fact, studies of conservation policing often conflates the occupation with rural policing and goes as far as defining it as a type of specialized rural law enforcement (Falcone, 2004; Eliason, 2003; 2006; Oliver & Meier, 2006; Weisheit, et al., 2005). In recent years conservation officers have been increasingly expected to conduct a variety of traditional policing functions outside of their original mandate (Falcone, 2004; Shelley & Crow, 2009; Sherblom, et al., 2002). As such, it is important to consider the nature of their occupation and how it may serve to influence levels of stress felt by these officers.

Policing in a Recreational Context

As discussed previously, state parks have experienced significant increases in visitation totals over the past several decades (Leung, Smith, & Miller, 2015; NASDP, 2018). For example, Virginia State Parks' visitation records indicate that numbers have more than doubled from 4.4 million in 1994, to 10.02 million in 2016 (VDCR, 2017). In addition to increases in visitor totals, there has also been an apparent shift in the number of individuals living in close proximity to both state and national recreational areas (English, Froemke, & Hawkos, 2014). Concomitant with the presence of more individuals, criminal justice scholars have noted an "urban spillover" effect with drug problems, domestic violence, and other typically urban-associated crimes occurring more frequently in recreational settings (Chavez, Tynon, & Knap, 2004; Pendleton, 1996; Tynon, et al., 2001; Tynon & Chavez, 2006; Tynon, Chavez, & Baur, 2010; Wynveen,

Bixler, & Hammitt, 2007). In spite of this assertion, there remains a dearth of research regarding the effects of this shift on those who police such areas.

Conservation police, game wardens, conservation rangers, and wildlife managers are among the more than twenty titles used across the United States to refer to those who work to enforce laws and policies in state parks and natural resource areas, and who aid in the preservation of wildlife (Marks, 2013). According to the most recent census of state law enforcement agencies, some 246 agencies and 15,000 officers are employed in policing state parks and enforcing associated laws (Reaves, 2011). Research suggests that, typically, individuals elect to become conservation officers for a multitude of reasons, with the primary one being their passion for the outdoors (Eliason, 2011; 2016). For example, Eliason (2016) found that most game wardens in Montana entered the career out of a desire to protect natural resources and due to their overall enjoyment from working outdoors. The desire to protect the environment often manifested because of past experiences (e.g., observing an adult role model engage in poaching.) (Eliason, 2016).

Accordingly, Eliason's (2011) research revealed that many officers voiced discontent when their duties were redirected from wildlife enforcement to more general forms of policing, with one stating that, "Urban wildlife/human conflicts are taking up more and more time [in addition to] assisting other law enforcement agencies with backup and investigative expertise." (Eliason, 2011, p. 49). As alluded to in previous sections, perceptible role ambiguity can function as a source of stress (e.g., Adams, et al., 1996; Hall et al., 2010; Liederbach & Frank, 2003; Woldoff, 2016) among both urban and rural police, though the relationship may be even more pronounced for rural officers.

While some researchers have examined the job duties of conservation police (e.g., Eliason, 2003; 2014; Forsyth, 2008), relatively few (see Oliver & Meier, 2006; Walsh & Donovan, 1984 for examples) studies have quantitatively examined whether an expectation to perform general policing duties has resulted in these officers experiencing heightened levels of stress. As an example, Shelley and Crow (2009) assessed over 2,100 field incidents handled by conservation officers in Florida. Their analysis revealed broad categories indicative of the notion that conservation officers indeed are expected to arrest or ticket individuals in violation of an array of laws. For example, boating violations constituted the most frequent citations, followed by drug enforcement and then fishing violations. Shelley and Crow (2009) did not address whether officers' time spent enforcing certain laws were related to either elevated or lowered stress levels specific to the task. However, it did provide some insight into the types of incidents encountered by conservation police officers. With that understanding in mind, the following section serves to introduce the literature that is available on conservation officers' duties, with a specific focus on the inherent dangers of conservation policing and the impact that duties have upon perceived stress.

Dangers of Conservation Policing

Societal concerns have largely rendered the types of illicit behavior policed by conservation officers to be designated as folk crimes (Eliason, 2003; Forsyth et al., 1997; Ross, 1961). Although violations related to fishing, hunting, and other game laws are generally considered unacceptable, they are often treated indifferently by the court system and typically not subject to the public stigmatization associated with other crimes (Forsyth, Gramling, & Wooddell, 1997; Ross, 1961). In spite of this general indifference, conservation police officers often find themselves in potentially deadly situations on a regular basis (Eliason, 2003; 2006).

Some recreationists may view the officers' presence as a nuisance, and many hunters and fishermen are armed during encounters. Eliason (2006), relying on interviews with conservation officers in Kentucky, revealed that verbal abuse (from recreationists) is most common, but serious physical altercations also occur. For example, some officers were wary of the potential of running into armed felons illegally engaging in sporting activities, mentally unstable recreationists, and others who were under the influence of alcohol or drugs (Eliason, 2006).

Officers also at times refer to the constant fear of a camouflaged individual spotting and having the ability to watch them well before they become aware of the hunter's presence. For example, one officer stated, "[a hunter] thought that I might have been a deer... [but] that something was me and I am glad this hunter waited long enough to identify what was making the noise in the woods before shooting...this situation was an eye opener for both of us." (Forsyth & Forsyth, 2009, p. 217). In addition, the environment in which conservation officers work can also present a danger to them. Forsyth and Forsyth (2009) found that officers reported animals like snakes are a common problem, as well as insects (e.g., spiders) and other hazards (e.g., unstable cliffs, embankments, etc.) which are all typically unique to their occupation.

Seeking to partially assess the validity of safety concerns, Carter (2004) examined use of force by and against game wardens from 1995-1998. Results indicated that, on a per-citation basis, game wardens were three times more likely to be assaulted by a weapon of any kind and seven times more likely by a firearm or knife than traditional state police. The likelihood of injury was most pronounced in incidents where the offender assaulted the officer due to the high probability that the officer was without nearby backup. Of unique interest, considering the previous discussion on changing job descriptions, Carter (2004) found that 68% of incidents involving force occurred when conservation officers were conducting some type of general law

enforcement duty—not enforcing game or wildlife laws. This revelation was not unique to his work, as a more recent study of use of force incidents in Florida suggested that 84% involved encounters with individuals engaged in non-wildlife offenses (Patten & Caudill, 2013).

Stress

In spite of the attention dedicated to the perceived dangers of conservation policing, scant research has focused on the degree to which experiences and perceptions impact officer stress. In addition, they primarily take a qualitative approach in addressing the issue (Eliason, 2006; 2014; 2016; Oliver & Meier, 2006; Walsh & Donavon, 1984). This lack of exploration is perhaps attributable to rural environments being characterized by the “Mayberry” effect, or the idea that such locales are virtually crime-free (Liederbach & Frank, 2003; Paulsen, 2003). However, it has been well-established that there are dangers inherent to the job of a conservation officer and that these officers are now being tasked with more traditional policing duties (Carter, 2004; Eliason, 2003; Forsyth & Forsyth, 2009; Shelley & Crow, 2009). It follows that conservation officers are likely to experience stress throughout the duration of their shift, and more broadly, their overall tenure as an officer (Eliason, 2014).

Walsh and Donavon (1984), sampling officers in Pennsylvania (n=139), conducted the first quantitative study assessing perceived stress among conservation police. They made use of a stress-scale asking officers to state their level of agreement with statements pertaining to their occupation. Over 80% of officers reported that their work was dangerous, that they worked long hours, and that the job was demanding. In addition, 64% indicated that their work functioned to isolate them from their family (Jackson & Maslach, 1982; Waters & Ussery, 2007). While setting the stage for future inquiry into conservation officer stress, their work was limited to the degree that it failed to distinguish whether gender, education, or other demographical

characteristics played a role in perceptions. Moreover, they did not inquire about the specific aspects of the job that made it “dangerous” or whether some aspects were more physically or psychologically taxing than others.

Relying upon a sample of officers in Virginia, Oliver and Meier (2006) sought to extend Sandy and Devine’s (1978) work (previously discussed) on rural policing to determine the impact that various factors had upon perceived stress among officers employed in those settings. Oliver and Meier’s (2006) results revealed that military experience, gender, marital status, and education all impacted officer stress levels. Specifically, it was revealed that “Those that were female, single or divorced, and with no college degree or military experience were more likely to report higher levels of stress” (Oliver & Meier, 2006, p. 16). Of further salience, officers who had been previously injured on the job also experienced higher levels of stress.

One limitation to Oliver and Meier’s (2006) work is that it failed to query officers regarding use of force incidents or verbal confrontations with citizens. Research indicates that critical incidents, or acute stressors, have a profound impact on officer stress and serve to negatively influence all aspects of an officer’s life (Cullen et al., 1983; Hall et al., 2011; Hickman et al., 2011). This lack of exploration fails to allow for a true understanding of the relationship between individual characteristics and stress associated with events that are most likely to result in it.

More recently, Eliason (2006) found that many characteristics of conservation policing (e.g., working outdoors, autonomy) provide officers with satisfaction. This satisfaction was hindered, however, by aspects of employment that officers deemed to be highly stressful. Most commonly cited were a lack of support by the court system (through failure to punish) and the requirement to work long hours, which limited personal time with family. For example, one

participating officer stated, "...Very stressful. Your personal life is constantly interrupted by the public. Work load. Self-inflicted stress due to the job demands" (Eliason, 2014, p. 201). In spite of these challenges, two-thirds of interviewed officers suggested that they would not change occupations if given the chance to do so. It thus appears that autonomy and other rewarding aspects of the job may outweigh some of the inherent stressors common to it.

It is important to consider the role that recent changes in conservation policing (as previously discussed) may play in influencing officer stress. Only one study to date has done so, with Eliason (2016) finding that the majority of interviewed officers (n=22) felt the repercussions of the shift. As an example, one officer stated (in discontent): "Yes – we have become reactive and less proactive. The duties or tasks have become so broad it is impossible to properly and fairly perform job duties" (Eliason, 2016, p. 222). It should be noted that none of Eliason's (2006, 2014, 2016) works specifically address or seek to discern the level of stress exhibited by conservation officers as a result of this shift. Not only that, but the previously discussed studies (i.e., Eliason, 2006; 2014; 2016; Oliver & Meier, 2006; Walsh & Donavon, 1984) all failed to assess whether specific components of conservation policing were more stressful than others. Finally, no research to date has investigated whether conservation officers feel the repercussions of being expected to perform more general policing duties and how demographical factors may influence this perception.

The Current Study

In order to fill these gaps in the research, the current study seeks to quantitatively investigate perceived stress among conservation officers via surveys distributed to a sample of officers across several states. It is structured around a series of research questions and associated hypotheses, which are discussed in detail below.

R₁: Do conservation officers experience high levels of inherent stress, and related, what specific stressors do they find most impactful?

Research indicates that conservation officers have expressed that various components of their occupation are stressful, but that autonomy and the ability to work outdoors provide mediating satisfaction (Eliason, 2003; 2006). The literature also points to various unique dangers inherent in conservation policing, such as dealing with armed and concealed individuals on a continual basis, contact with wildlife, and the opportunity that isolation presents for a perpetrator to assault an officer (Carter, 2004; Forsyth & Forsyth, 2009). Moreover, given that individual state park agencies are generally small, few individuals are tasked with patrolling large areas. This can potentially lead to long shifts, weekend work, loss of family time, and other logistical concerns (Eliason, 2006; Falcone, 2004; Oliver & Meier, 2006). In light of these considerations, the study hypothesizes that (H₁) *conservation officers will report moderate levels of inherent stress*. Further, due to unique physical dangers (e.g., with wildlife, recreationists, etc.) inherent in their occupation, it is posited that (H₂) *conservation officers will rate duty-related physical dangers highest among all inherent stressors*.

R₂: Do conservation officers find traditional policing responsibilities to be more stressful than those specific to enforcing fishing and wildlife laws?

The literature indicates that conservation officers are increasingly relied upon to assist rural police agencies (e.g., Falcone, 2004; Weisheit et al., 2005), and as such have adopted a more generalist policing role (e.g., Eliason, 2003; 2006; 2014). Some officers have indicated that additional stress often accompanies this shift in their workload and occupational responsibilities (e.g., Eliason, 2014; 2016). In light of this, the current study hypothesizes (H₃) that *officers will rate traditional law enforcement duties as more stressful than conservation-specific duties*.

R₃: Does a relationship exist between the amount of time dedicated to performing specific duties and the levels of stress associated with them?

A limited amount of research has been dedicated to understanding the various tasks performed by conservation officers (e.g., Eliason, 2003; Forsyth, 2008; Shelley & Crow, 2009). It has revealed that officers perform a variety of functions related to the enforcement of game laws and park regulations, in addition to the general policing duties previously discussed. In spite of this scholarly attention, no research to date has examined whether the frequency in which an officer performs duties serves to condition levels of stress associated with those duties. It seems logical that officers may find some activities more stressful if they are commonly asked to undertake them. As such, the study seeks to test the hypothesis (H₄) that *the frequency of duty performance serves to influence the level of stress associated with it*. In light of the changing nature of conservation policing, it further hypothesizes (H₅) that *officers who are commonly tasked with performing general law enforcement functions will find these duties more stressful than officers who undertake them less regularly*.

R₄: Do individual characteristics serve to influence the levels of perceived stress among conservation officers?

As discussed, several studies have found officer characteristics (e.g., age, race, experience, marital status, military experience) to condition perceived stress (He et al., 2002; He et al., 2005; Kakar, 1998; Scott, 2004; Violanti et al., 2016). In relation to conservation policing, Oliver and Meier (2006)—who conducted the only quantitative study examining stress among conservation officers to date—found that marital status, prior military experience, and education all served to influence stress among those included within their sample. Other factors, such as race and length of service are commonly related to stress in general policing studies (Dowler,

2005; Haarr & Morash, 1999; He, et al., 2005; Kurtz, 2008; Morash et al., 2006; Toch, 2002). In order to provide additional support for these findings, the current study seeks to assess the impact of several characteristics.

It is hypothesized (H₆) that *female officers will report higher overall levels of stress, whereas those who are married, have prior military experience, higher educational attainment, longer tenures as an officer, and who are older will report lower levels* (H₇, H₈, H₉, H₁₀, and H₁₁ respectively). In addition, it is hypothesized (H₁₂) that *race* (see e.g., Chae & Boyle, 2013; He et al., 2005) *will have some effect on officer stress levels*, though the mixed findings in the research literature prevent predictions regarding a specific direction for this relationship. Finally, and based upon past findings (Haarr & Morash, 1999; He et al., 2002; He et al., 2005), it is posited that gender and race will have some interactive effect on stress beyond their unique impacts. More specifically, it is hypothesized (H₁₃) *that white, female officers will experience the highest levels of stress*. A full summary of the various hypotheses to be tested can be found in Table 1.

Table 1: *Research Questions and Hypotheses*

R₁: Do conservation officers experience high levels of inherent stress, and related, what specific stressors do they find most impactful?

H₁: Conservation officers will report moderate levels of inherent stress

H₂: Conservation officers will rate duty-related physical dangers highest among all inherent stressors

R₂: Do conservation officers find traditional policing responsibilities to be more stressful than those specific to enforcing fishing and wildlife laws?

H₃: Officers will rate traditional law enforcement duties as more stressful than conservation-specific duties.

(continued)

Table 1 (continued)

R₃: Does a relationship exist between the amount of time dedicated to performing specific duties and the levels of stress associated with them?

H₄: The frequency of duty performance serves to influence the level of stress associated with it.

H₅: Officers who are commonly tasked with performing general law enforcement functions will find these duties more stressful than officers who undertake them less regularly.

R₄: Do individual characteristics serve to influence the levels of perceived stress among conservation officers?

H₆: Female officers will report higher overall levels of stress

H₇: Those who are married will report lower levels of stress

H₈: Those who have prior military experience will report lower levels of stress

H₉: Those with higher educational attainment will report lower levels of stress

H₁₀: Those with longer tenures as an officer will report lower levels of stress

H₁₁: Officers who are older will report lower levels of stress

H₁₂: Race will have some effect on stress levels

H₁₃: White female officers will report the highest overall levels of stress

Chapter Summary

As discussed, scholars have recently suggested that stress oftentimes functions as a transaction with one's environment (Lazarus, 1999). Specific to the field of policing, Stinchcomb (2004) posited that stress manifests when officers are presented with a scenario that places on them demands that supplant their ability to meet or cope with such demands. Two forms of stress have been identified in the policing literature: organizational and inherent (or duty-related) stress (e.g., Aaron, 2000; Beehr, Johnson, & Nieva, 1995; Eliason, 2006; Toch, 2002; Violanti, et al., 2018; Waters & Ussery, 2007).

Organizational stress typically emanates from bureaucracy and departmental structure/policies, whereas inherent stress is a function of the day-to-day tasks that officers are asked to perform.

Regardless of form, research has suggested that officer characteristics, such as age, gender, education, and marital status, may serve to influence levels of stress (He et al., 2002; He et al., 2005; Kakar, 1998; Scott, 2004; Oliver & Meier, 2006). Unfortunately, the bulk of these studies have focused on urban agencies in spite of the fact that rural police are often confronted with unique situations (equally threatening in nature) indigenous to the rural ethos. They may find themselves geographically isolated in the field, lacking in resources, and inextricably linked to their surrounding community (which can present difficulty in separating professional and personal roles). In addition, some research suggests that rates of experienced critical incidents (or acute stressors) are not all that different between urban and rural departments (Chopko et al., 2015).

This lack of attention to rural settings extends to conservation officers, as only a handful of attempts have been made to better understand how they experience stress (e.g., Oliver & Meier, 2006; Walsh & Donovan, 1984). This is especially problematic in light of the recent shift from conservation-specific duties to more general policing responsibilities. In light of this, the current study intends to fill this knowledge gap by developing a better understanding of overall stress among conservation officers, ascertaining whether certain duties serve to exacerbate it, and determining the role that officer characteristics play in either heightening or lowering perceived levels. The next chapter will discuss the methodological approach undertaken to do so, with a specific focus on the sample to be pursued, the various measures (dependent and independent) to be employed, and the proposed manner of analysis.

CHAPTER 3

METHODOLOGY

As discussed, the current study seeks to explore an established set of research questions (and corresponding hypotheses) related to stress among conservation officers. This chapter will begin by discussing the proposed sampling strategy, inclusive of the agencies to be contacted, manner in which individual officers will be asked to participate and administration of the survey. Next, it will address survey construction and the various dependent and independent measures to be employed. This is followed by an overview of the proposed plan of analysis and various statistical techniques that will be used to test the aforementioned hypotheses.

Data

Sample

As of 2008 (the most recent year for which data are available) there were around 15,000 sworn state conservation officers across the United States (Reaves, 2011). Because surveying all officers would present various logistical challenges, it was necessary to select a sample of states from which to recruit officers. The current study relied upon both convenience sampling and purposive sampling in order to do so. This entailed reaching out to conservation agency administrators (and union representatives) to gauge their receptiveness to survey officers. Once approval was granted, individual officers were asked to voluntarily participate via emails forwarded by their supervisor(s). These emails contained a link to the survey—hosted by an online survey platform (SurveyMonkey)—in addition to information regarding informed consent and anonymity of responses.

A preexisting relationship with the Virginia Department of Game and Inland Fisheries presented an initial opportunity to gain approval for surveying the approximately 102 eligible

officers in the State. In addition, permission was sought from several other states across the country in order to account for geographical diversity in officer tasks and experiences. Previous studies involving conservation officers—both qualitative and quantitative in focus—have largely been geographically limited (see e.g., Eliason, 2016; Oliver & Meier, 2006 for examples), which presents potential limitations regarding generalizability. A total of six states provided permission to survey officers, resulting in 368 completed surveys. Table 2 provides a complete breakdown of this participation, including the number of completed surveys and response rates by state.

Table 2: *Participating State Agencies*

State	Eligible Officers	Surveys Completed	Response Rate
California	310	71	22.9%
Indiana	179	70	39.1%
North Carolina	190	76	40.0%
South Dakota	50	3	6.0%
Tennessee	239	84	35.1%
Virginia	102	49	48.0%
Total	1070	368	34.4%

Survey Instrument

The survey instrument contained a total of 52 questions related to demographic characteristics, assigned duties and perceived stress (see Appendix One for the complete document), and took approximately seven minutes to complete on average. The first portion of the survey asked respondents to respond to 10 demographic questions (e.g., age, gender) that were drawn from the literature and represent characteristics that have been commonly found to condition levels of stress among officers (see e.g., He et al., 2002; He et al., 2005; Kakar, 1998; Scott, 2004; Oliver & Meier, 2006).

The second section included 20 questions relating to stress perceptions that were drawn from McCreary and Thompson's (2006) police stress scale (PSQ-Op). These Likert-scale items (ranging from (1) strongly disagree to (7) strongly agree) assessed inherent police stressors such as long work hours, isolation, and being injured on the job. Such questions were ideal for the current study's goal of determining the presence of inherent stress among conservation officers, as none of the items related to aspects of organizational stress (discussed within the review of the literature). Of added benefit was the scale's inclusion of various stressors that extend beyond working hours (e.g., limitations on social life). Research has consistently found these stressors to take a toll on officers (Adams et al., 1996; Hall et al., 2010; Jackson & Maslach, 1982; McCreary & Thompson, 2006), though few attempts have been made to explore their generalizability to conservation officers.

The PSQ-Op has been found to feature strong validity and reliability, as McCreary and Thompson's (2006) initial test revealed a Cronbach's alpha of .92 (suggesting appropriate internal consistency) (George & Mallery, 2003; Gliem & Gliem, 2003). In addition, Gliem and Gliem (2003) suggest that using multiple items to measure a single concept may contribute to a lower likelihood of error (invalid results) in comparison to reliance upon a single item. Supportive of this notion, several researchers have found the scale to be a valid tool for measuring officer stress (Maran, Varetto, Zedda, & Ieraci, 2015; Patterson, Chung, & Swan, 2014; Page & Jacobs, 2011).

Minor modifications were made (as it relates to the examples listed alongside each item) in order to tailor the scale to the experiences of conservation officers. Moreover, though McCreary and Thompson (2006) did not originally apply meaning to each of the Likert-type items, doing so may assist respondents in better understanding the various categories that they

are to choose from. The following were chosen for the purposes of this study: (1= not stressful at all, 2= a little stressful, 3=somewhat stressful, 4=moderately stressful, 5=pretty stressful, 6=stressful, 7=very stressful). This practice has been widely accepted within the research literature (Croasmun & Ostrum, 2011; Ragesh, Tharayil, Raj, Philip, & Hamza, 2017).

The third section was comprised of a series of 11 Likert-scale items (created by the researcher) related to commonly performed policing tasks (both general and conservation-specific) and how stressful officers found them to be. Items ranged from (1) strongly disagree to (7) strongly agree. An additional option for not applicable “N/A” was included in case officers had little experience with the respective task and in order to eliminate any potential bias associated with forcing a response (see Croasum & Ostrum, 2011 for a more thorough discussion of this potential issue). Included duties (e.g., enforcing park policies, responding to emergencies, enforcing wildlife laws) were drawn from the research literature exploring occupational responsibilities of conservation officers (Eliason, 2006; 2014; 2016; Oliver & Meier, 2006; Patten, et al., 2015), and largely based upon Shelley and Crow’s (2009) examination of nearly 2,100 field incidents among officers in Florida.

Lastly, the survey included a section (comprised of 11 items) in which respondents were tasked with rating how often (from (1) never to (6) very frequently) they performed the various job duties assessed in the previously-discussed scale. Such an approach has been utilized in previous studies examining police stress in comparison to time spent performing certain tasks (Korre, Farioli, Varvarigou, Shato, & Kales, 2014), and allowed for similar exploration in the current work.

Measures

Dependent Measures

Dependent measures for the current study were drawn from the initial two scales: McCreary and Thompson's (2006) PSQ-Op and the scale measuring perceived stress associated with various job duties commonly performed by conservation officers. As previously discussed, the PSQ-Op contains 20 Likert-scale items assessing inherent stressors related to the occupation of policing. Options range from (1) least stressful to (7) very stressful. Responses on the scale were aggregated (by summing responses) and divided by the total number (20) of questions to provide a standardized score. This created a continuous dependent measure, with scores ranging from one (1) to seven (7), which represented an officer's overall *stress score*. In order to ensure the validity of this approach (and the internal consistency of the measure), a reliability analysis was employed prior to inclusion of the measure into the (to be discussed) regression models.

The second dependent measure related to perceived stress associated with various policing duties (both general and conservation-specific). This variable was operationalized via use of the responses to the series of questions contained in the third section of the survey: 11 commonly performed duties. Respondents were tasked with rating how stressful each respective duty was from (1) no stress at all to (7) very stressful. Responses for this dependent measure remained disaggregated, as the research sought to determine whether frequency of performing duties impacted the perceived stress associated with each.

Independent Measures

The initial set of independent measures related to demographic characteristics. Recall that it was hypothesized that several characteristics may serve to condition stress among conservation officers. The first, *gender*, was operationalized categorically, and respondents are asked to choose among the following: (1) male, (2) female, or (3) other. This measure was dichotomized

prior to inclusion in the various analyses (0=male; 1=female) due to a lack of selection for the “other” category. *Age* was measured categorically as well, with respondents selecting from the following options: (1) 18-25, (2) 26-33, (3) 34-41, (4) 42-49 (5) 50-57, and (6) 58 and over. The third characteristic, *ethnicity*, was structured in line with past research on the topic, with available categories including: (1) Non-Hispanic Black, (2) Non-Hispanic White, (3) Hispanic, (4) Asian, (5) Native American, and (6) Other. For analytic purposes, and due to a lack of variation among most categories, this variable was dichotomized into (0) White and (1) non-White categories.

Education was measured via the following categories: (1) less than high-school, (2) high-school diploma/GED, (3) some college, (4) associate’s degree (or technical degree), (5) bachelor’s degree, (6) master’s degree, (7) doctoral or professional degree (e.g., Ph.D, juris doctor, etc.), and (8) other. Responses for the other category were coded as missing for purposes of the analysis, allowing for the measure to be treated as ordinal data. *Marital status* was queried through the following response options: (1) single/unmarried, (2) married, (3) separated, (4) divorced, and (5) widowed. In order to test the hypothesis that those who are married perceive higher overall levels of stress, responses were dichotomized. Those who select single/unmarried, separated, divorced or widowed were grouped into a non-married category (0), with those selecting married constituting the second category (1).

Military experience was also measured dichotomously, with categories for non-veterans (0) and veterans (1). *Prior police experience* was operationalized through the use of two survey items. The first queried whether respondents had prior police experience before becoming a conservation officer (0=no; 1=yes). The second question tasked those who responded affirmatively with selecting the category that contained the number of years that they worked as

a police officer: (1) 1-2 years, (2) 3-4 years, (3) 5-6 years, (4) 7+ years. These were combined to create the *prior police experience* measures by simply adding a (0) category for those who indicated that they had no prior experience. The last characteristic, *conservation experience*, measured one's length of tenure as a conservation officer. It was operationalized via use of the following options: (1) 1-3 years, (2) 4-6 years, (3) 7-9 years, (4) 10-12 years, (5) 13-15 years, and (6) 16+ years.

The second set of independent measures related to the frequency in which officers performed various policing *duties* (as queried on the last section of the survey). These measures allowed for an exploration of the research question addressing the relationship between duty intensity and the perceived stress associated with it. Eleven such *duties* were assessed, with a full breakdown provided in Table 3.

Table 3: *Job Duties*

Assisting other law enforcement agencies
Drug-related encounters
Serving warrants
Alcohol-related encounters
Traffic infractions
Responding to emergencies
Illegal disposal of waste
Vandalism
Testifying in court
Enforcing park policies
Enforcing wildlife and fishing game laws

Response options were in Likert-scale format, ranging from (1) never to (6) very frequently. To facilitate analysis (in the form of independent samples t-tests), responses were dichotomized into two separate groups. Those selecting options one through three were grouped

into the lesser frequency category (0), whereas those selecting the remaining options were included in the higher frequency category (1).

Plan of Analysis

In testing the established hypotheses, data analysis proceeded in a series of four stages. First, although McCreary and Thompson (2006) conducted a reliability analysis when creating the PSQ-Op scale, this assumption (that all items closely relate) was retested in the current study to assess whether the provision of unique examples beside each item on the PSQ-Op (to make each more relevant to the field of conservation policing) served to influence consistency of responses. Moreover, as the officers relied upon in the development of the PSQ-Op all worked in urban departments, a reliability coefficient for the PSQ-Op employed improved confidence in the claim that all items were measuring the same construct. This a practice largely replicated in the literature when determining the internal consistency of a scale to measure a construct such as stress (e.g., George & Mallery, 2003; Gliem & Gliem, 2003).

Upon completion of the reliability analysis, descriptive statistics (stage two) were calculated for both the dependent and independent measures. Doing so allowed for an initial understanding of data distribution and provided insight into levels of perceived stress. This information was utilized to address the initial research question related to general conservation officer stress and the specific aspects (both in terms of inherent stressors and job-related duties) that they deemed most stressful.

Stage three relied upon both independent samples t-tests and paired samples t-tests in order to answer research questions two and three. As discussed, the second research question involved discerning whether officers found general law enforcement tasks more stressful than conservation-specific duties. To answer this question, duties were dichotomized into a general

law enforcement category and a conservation specific category (see Table 4). Because paired samples t-tests are commonly utilized when analyzing responses provided by individuals who are ‘matched with themselves,’ this was the most appropriate form of analysis to assess any potential differences (Bachman & Paternoster, 2017).

Table 4: *Categorized Job Duties*

General Law Enforcement Duties	Conservation-Specific Duties
Drug-related encounters	Responding to emergencies
Serving warrants	Illegal disposal of waste
Assisting other law enforcement agencies	Vandalism
Traffic infractions	Enforcing park policies
Alcohol-related encounters	Enforcing wildlife and fishing game laws
Testifying in court	

Independent samples t-tests were utilized to address the third research question. These tests are commonly used when examining whether a difference exists between two group means (Bachman & Paternoster, 2017; Fox, Levin, & Ford, 2014). To determine, then, whether time spent performing duties influenced an officer’s reported stress level, responses for the duty-frequency questions were dichotomized in the following manner: Those who selected options one through three (indicating that they performed the duty less regularly) were grouped into a lower frequency category (0), whereas those selecting four through six (suggesting that they commonly performed the duty to some degree) were included in the higher frequency group (1). Following this, a series of independent samples t-tests (one for each respective duty) were employed to explore potential group differences across each duty category (using the Likert-

scale stress responses contained in section three of the survey). It is important to note that these tests only provided an understanding of whether differences existed, and did not reveal the strength of the relationship (Fox et al., 2014). Thus, it became necessary to compute Pearson's r correlation coefficients to assess the strength of the difference between means (in the event that the t-test revealed itself to be statistically significant).

To appropriately answer research question four (and H₆ through H₁₃), two linear regression models were utilized. Linear (OLS) regression was most appropriate due to the fact that the dependent variable being predicted (i.e., stress operationalized as the mean score from the PSQ-Op) was continuous in nature (Slinker & Glantz, 2008). First, however, it was necessary to assess the included independent variables to ensure they were not too closely related to one another (i.e., multicollinearity). This was achieved via presentation of a correlation matrix and assessment of both tolerance and VIF values in the resulting linear models (Bachman & Paternoster, 2017). The initial linear regression model examined whether the various independent measures were predictive of an officer's reported stress levels. The second model largely replicated the first, with the addition of an exploratory interaction term designed to ascertain whether multiplicative effects were present.

Chapter Summary

This chapter served to address the methodological steps undertaken to answer the research questions associated with the current study. As discussed, the overarching goal of this research was to determine whether conservation officers experience inherent stress (and what factors serve to condition it), whether specific duties are more stressful than others, and whether time spent performing a duty mediates reported stress for that specific duty. The data were derived from surveys completed by conservation officers located in several states. Four distinct

sections within the survey allowed for the creation of necessary measures: a series of demographic questions modeled upon the research literature, a revised version of McCreary and Thompson's (2006) PSQ-Op, a section measuring perceived stress related to both general and conservation-specific duties, and a section measuring the frequency in which officers performed specific duties. Statistical analysis of the collected data proceeds in four stages, beginning with a reliability analysis of the items contained within the PSQ-Op. This is followed by a presentation of the descriptive statistics associated with the various measures employed, which provides the opportunity to address the initial research question related to perceived stress among conservation officers. Third, a series of independent samples t-tests are used to address research questions two and three. Finally, the analysis concludes with two linear regression models designed to examine the effects of officer characteristics on conditioning stress levels.

CHAPTER 4

RESULTS

This chapter addresses the results of the various statistical techniques utilized to answer the research questions laid out in the current study and proceeds in a series of stages. Univariate analysis will first be addressed, which provides an overall description of the data collected from survey participants. Following this, bivariate statistics will be presented to ascertain whether any relationships existed between stress and officer duty type (i.e., general and conservation-specific), as well as time spent performing duties and stress related specifically to them. Lastly, two multivariate statistical models will be presented to allow for a determination of whether individual officer characteristics are predictive of reported stress-levels, and whether any multiplicative effects exists (between variables).

Univariate Statistics

A total of 368 conservation officers completed the survey. However, missing data was prevalent on 22 of these submissions, leaving a final sample of 346 (n=346). In order to gain an initial understanding of their characteristics, descriptive statistics were calculated for the various independent measures, including *gender*, *ethnicity*, *highest level of education achieved*, *marital status*, *prior military* and *police service*, and *years of service as a conservation officer* (see Table 5 for a comprehensive summary). The data revealed that 81.8% (283) of the respondents were male, with the remaining 18.2% (63) being female. Further, 96.2% (333) were white, while 2.3% (8) were non-white and 1.4% (5) elected not to provide an answer for the item. Though significant disparities in *ethnicity* and *gender* were potentially problematic for the analyses, it should be noted here that the breakdown is similar to that revealed in the work of Oliver and Meier (2006).

Table 5: *Frequencies*

Variable	Frequency	Percent
Gender		
Male	283	81.8%
Female	63	18.2%
Ethnicity		
White	333	97.6%
Non-White	8	2.4%
Education		
HS Diploma	1	.3%
Some College	18	5.2%
Associate's or Technical Degree		15.9%
Bachelor's Degree	247	71.4%
Master's Degree	22	6.4%
Doctoral or Professional Degree	1	.3%
Marital Status		
Single/Unmarried	76	22.0%
Married	269	78.0%
Prior Military Service		
Yes	34	9.8%
No	312	90.2%
Prior Policing Experience		
Yes	29	8.4%
No	316	91.3%
Years of Service as a Conservation Officer		
Less than one year	8	2.3%
1-3	52	15.0%
4-6	49	14.2%
7-9	45	13.0%
10-12	35	10.1%
13-15	45	13.0%
16+	112	32.4%

Frequencies were also obtained for the *highest level of education* obtained by officers, with 94.2% (327) having received some type of college degree. Of these individuals, 71.8% obtained a bachelor's degree, and 6.7% (23) either a master's degree or higher. In relation to

marital status, 77.7% (269) of officers indicated they were married and 22% (76) that they were single (with one officer electing to not answer). Nearly 10% (34) of the participants indicated they had previously *served in the military*, while 8.4% (29) stated that they had *policing experience* prior to becoming a conservation officer. In relation to the question regarding tenure as a conservation officer, answers were rather evenly distributed across all categories. The most frequently selected category was the one indicating 16+ years of service, as 32.4% (112) of officers fell within it.

Descriptive statistics were also calculated for the scales that serve as dependent variables in the study, and for the independent measures focusing on the frequency of duty performance. As discussed, officers were asked to respond to Thompson and McCreary's (2006) PSQ-Op scale, which has been used by several researchers to explore stress within the field. Though the overall output for each of the twenty items is important, it is beyond the scope of this section to address each in significant detail (see Table 6 for the complete PSQ-Op results). With that said, some findings merit attention here. In particular, *officers always feeling like they are on the job* (M=4.27) and *not being able to spend enough time with friends and family* (M=4.27) were revealed to present the highest levels of stress. These were closely followed by the item for experiencing or dealing with *traumatic events*, with a mean score of 3.96.

Officers rated *making friends outside of the job* (i.e., making non-conservation officer friends) as presenting the least amount of stress, with a mean of 2.88. In fact, the largest category of responses for this item was one (1), indicating that officers did not find the task to be all that concerning. In addition, *family or friends feeling the effects of stigma associated with conservation officers' jobs* (M=2.93) or having to maintain a "*higher image*" in public (M=2.95) were scored as the second and third lowest-rated stressors.

Table 6: *PSQ-Op Descriptive Statistics*

PSQ-Op Survey Items	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
Not enough time to spend with friends and family	4.27	4.00	5.00	1.88	1.00	7.00
Feeling like you are always on the job	4.27	4.00	6.00	1.90	1.00	7.00
Traumatic Events	3.96	4.00	2.00	1.78	1.00	7.00
Over-time Demands	3.84	4.00	2.00	1.78	1.00	7.00
Paperwork	3.70	3.00	2.00	1.72	1.00	7.00
Long Work Hours	3.61	3.00	3.00	1.58	1.00	7.00
Negative comments from the public	3.51	3.00	2.00	1.78	1.00	7.00
Managing social life outside of work	3.49	3.00	2.00	1.85	1.00	7.00
Isolation	3.48	3.00	2.00	1.70	1.00	7.00
Fatigue	3.46	3.00	2.00	1.54	1.00	7.00
Risk of being injured on the job	3.41	3.00	2.00	1.60	1.00	7.00
Work-related activities on days off	3.40	3.00	2.00	1.70	1.00	7.00
Impact of occupation on health	3.40	3.00	2.00	1.81	1.00	7.00
Limitations to your social life	3.25	3.00	2.00	1.83	1.00	7.00
Lack of understanding from family or friends about your work	3.15	3.00	2.00	1.78	1.00	7.00
Finding time to stay in good physical condition	3.09	3.00	2.00	1.54	1.00	7.00
Eating healthy at work	3.02	3.00	1.00	1.69	1.00	7.00
Upholding a “higher image” in public	2.95	2.00	1.00	1.78	1.00	7.00
Friends/family feel effects of stigma associated with your job	2.93	2.00	2.00	1.84	1.00	7.00
Making friends outside of the job	2.88	2.00	1.00	1.85	1.00	7.00

Finally, results only provided moderate support for the second hypothesis, as physical dangers (e.g., traumatic experiences, being injured on the job, etc.) were included among the highest-rated stressors, but officers viewed other items (such as *losing family time*) as more impactful.

In addition to the individual items, composite scores for the twenty-item scale were also generated in order to create the study’s primary dependent measure (see Table 7). An Alpha score was generated in order to gauge the internal consistency of this scale. The value ($\alpha=.937$) was well above that which is generally considered to be sufficient (.80); as such, the scale appears to be a reliable means of assessing overall stress. A standardized score was obtained for the sample, with resulting scores ranging from one (1) indicating the lowest possible level of stress to seven (7) indicating the highest possible level. Actual values ranged from 1.11 to 6.50, with an overall mean of 3.45. This suggests that, on average, officers perceived their occupation to be moderately stressful, which is in line with the expectations of the initial hypothesis (H_1).

Table 7: *Sample PSQ-Op Scale Score*

	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
PSQ-Op Scale	3.45	3.31	2.85	1.19	1.11	6.50

The second dependent measure took the form of scales assessing both general law enforcement duties and conservation-specific duties. Similar to the PSQ-Op, it is important here to address findings for a few of the individual items (see Table 8). As was largely expected based upon previous works (e.g., Anshel, Robertson, & Caputi, 1997; Violanti, 2016), the duty for which officers reported the highest level of stress was responding to emergency situations (mean score of 3.62). Incidents involving alcohol were rated as the second highest stressor, with a mean of 3.30, followed by drug-related encounters ($M=3.21$). On the other end of the spectrum, the

lowest levels of perceived stress were associated with the illegal disposal of waste (2.43), vandalism (2.56) and enforcing wildlife and fishing laws (2.67).

Table 8: *Individual Duty-Related Stress Scores*

Duty Items	Mean	Median	Mode	St. Deviation	Minimum	Maximum
Responding to emergencies	3.62	3.00	4.00	1.67	1.00	7.00
Alcohol-related encounters	3.30	3.00	2.00	1.59	1.00	7.00
Drug-related encounters	3.21	3.00	2.00	1.68	1.00	7.00
Testifying in court	3.16	3.00	2.00	1.68	1.00	7.00
Traffic infractions	2.89	2.00	2.00	1.47	1.00	7.00
Serving Warrants	2.84	2.00	1.00	1.73	1.00	7.00
Enforcing park policies	2.77	2.00	2.00	1.50	1.00	7.00
Assisting other law enforcement agencies	2.76	2.00	2.00	1.51	1.00	7.00
Enforcing wildlife and fishing game laws	2.67	2.00	2.00	1.38	1.00	7.00
Vandalism	2.56	2.00	2.00	1.46	1.00	7.00
Illegal disposal of waste	2.43	2.00	2.00	1.48	1.00	7.00

These individual items were aggregated to form a duty-related stress scale in a manner similar to the PSQ-Op, with a single score representing perceived stress across all duties (see Table 8). The resulting Alpha score ($\alpha=.898$) confirmed that the created scale was a reliable measurement of duty-related stress. The mean calculated composite stress score for the sample was a 2.94 (see table 9 below), indicating that, on average, officers perceived most of the 11 duty items to fall between being a little (2) and somewhat (3) stressful.

Table 9: *Sample Duty-Stress Scale Score*

	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
Duty-Stress Scale	2.94	2.72	2.00	1.19	1.00	6.27

Finally, descriptive statistics were generated for the items assessing about how often officers performed each of the duties included in the previous stress scale (see Table 10). Officers indicated that they *enforce park policies* most frequently (M=4.66), followed by *enforcing wildlife and fishing game laws* (M=3.86). In contrast, most officers reported that they infrequently *served warrants* (M=1.59) or *testified in court* (M=2.25). Having comprehensively discussed sample characteristics, attention is now turned to a discussion of the results for the bivariate stage of the analysis.

Table 10: *Duty Performance Frequency*

Duty Items	Mean	Median	Mode	St. Deviation	Minimum	Maximum
Enforcing park policies	4.66	5.00	6.00	1.55	1.00	6.00
Enforcing wildlife and fishing game laws	3.86	4.00	6.00	1.66	1.00	6.00
Responding to emergencies	3.81	4.00	3.00	1.43	1.00	6.00
Traffic infractions	3.74	4.00	3.00	1.46	1.00	6.00
Alcohol-related encounters	3.70	4.00	3.00	1.50	1.00	6.00
Assisting other law enforcement agencies	3.04	3.00	2.00	1.35	1.00	6.00
Vandalism	2.84	3.00	2.00	1.29	1.00	6.00
Drug-related encounters	2.72	2.00	2.00	1.36	1.00	6.00
Illegal disposal of waste	2.32	2.00	2.00	1.20	1.00	6.00
Testifying in court	2.25	2.00	2.00	1.03	1.00	6.00
Serving Warrants	1.59	1.00	1.00	0.89	1.00	6.00

Bivariate Statistics

Paired Samples T-Test

Paired sample, or matched sample, t-tests can be utilized when comparing scores at two time points for the same individual. However, they are also useful when assessing whether an individual's scores differ on two subsets of the same standardized scale (Bachman & Paternoster,

2017). The current study sought to determine whether officers found general law enforcement or conservation-specific duties to be more stressful. Scales were created (in the same manner as discussed above) for each sub-scale (see table 11). The mean stress score generated for duties in the general law enforcement category was 3.06, while the conservation-specific duty category featured a mean value of 2.82. The obtained t-statistic was 5.19, which revealed that the difference in the two category means was significant ($p=.00$) at the 95% confidence level. This finding supports the third research hypothesis, which maintained that officers would rate general law enforcement duties as more stressful than those which are conservation specific.

Table 11: *Dichotomized Duty Categories T-Test*

Variable	Mean	T	Mean Difference	Significance
Duty Categories		5.19**	0.24	.00
General Law Enforcement	3.06			
Conservation Specific	2.82			

**= $p < .01$

Independent Samples T-Tests

Independent samples t-tests are typically utilized for comparing the means for two distinct groups. As such, they were deemed most appropriate for determining whether the frequency in which an officer performs a specific duty impacts the perceived stress score associated with it (see Table 12 below). To achieve this, a median split was performed, creating two groups based on the frequency score assigned to a given duty. Individuals who selected options one through three, indicating that they less frequently performed the given task (Group 1), were assigned to the lower frequency group, and those who selected four through six (Group

2) to the higher frequency group (indicating that they performed the duty in question more commonly).

Table 12: *Duty Frequency and Stress T-Tests*

Variable	Mean	T	Correlation	Significance
Assisting other law enforcement agencies		-1.91	.342	.057
Low	2.65			
High	3.02			
Drug-related encounters		-3.05**	.329	.002
Low	3.05			
High	3.70			
Serving warrants		-2.23*	.262	.027
Low	2.79			
High	3.80			
Alcohol-related encounters		-4.68**	.337	.000
Low	2.90			
High	3.68			
Traffic infractions		-3.72**	.340	.000
Low	2.58			
High	3.16			
Testifying in court		-2.73**	.318	.007
Low	3.07			
High	3.89			
Responding to emergencies		-3.95**	.343	.000
Low	3.25			
High	3.95			
Illegal disposal of waste		-6.01**	.324	.000
Low	2.24			
High	3.59			
Vandalism		-4.85**	.336	.000
Low	2.29			
High	3.26			
Enforcing park policies		-3.12**	.343	.002
Low	2.38			
High	2.90			
Enforcing wildlife and fishing game laws		-2.88**	.335	.004
Low	2.43			
High	2.85			

* = $p < .05$; ** = $p < .01$

The results of the analysis yielded statistically significant mean differences at the 95% ($p < .05$) confidence level for each duty category, with the exception of *assisting other law enforcement agencies* ($t = -1.912$; $p = .057$). Further, the relationship between the two groups functioned negatively across all duty categories, indicating that officers in the second group (who performed a given duty more frequently) assigned it a higher stress score, on average, in comparison to the officers in the lower frequency group. Thus, it appears that the t-tests largely supported hypotheses four and five under research question three, which proposed that duty performance frequency and the type of duty being performed would impact associated levels of stress.

Multivariate Statistics

The final stage of the analysis revolved around the assessment of linear regression models designed to test the remaining hypotheses. The models sought to determine whether individual officer characteristics (e.g., age, gender, ethnicity, etc.) and their experiences (e.g., military service, police experience, etc.) were predictive of officer responses to the PSQ-Op. Prior to performing these tests, however, it was important to determine whether any of the relationships between individual measures presented issues of multicollinearity, which would violate the assumption that each item was measuring a unique factor.

As revealed in Table 13, only one relationship—between age range and conservation experience—presented a potential issue. The correlation coefficient obtained suggested that there was a strong relationship between these two items ($r = .73$). This relationship was expected due to the fact that officer's *age* often aligns with gaining *experience*. Additional diagnostics were computed in order to determine whether both could be included within the linear regression

models. Tolerance values and VIF scores suggested no significant issues, leading to the decision to retain both predictors.

Table 13: *Correlation Matrix*

	1	2	3	4	5	6	7	8
1. Gender	--							
2. Ethnicity	.18**	--						
3. Education	.13*	.01	--					
4. Marital status	-.24**	-.11	-.07	--				
5. Age range	-.16**	-.10	.01	.18**	--			
6. Conservation experience	-.17**	-.10	.01	.19**	.73**	--		
7. Prior police experience	.12*	-.02	.10	-.01	-.01	.12*	--	
8. Prior military service	.13*	.05	.08	-.06	-.11*	.11*	.22*	--

*p<.05; **p<.01

Table 14 contains a summary of the output generated from the linear regression model seeking to explore the relationship between individual characteristics and perceived stress scores obtained from the PSQ-Op scale. The model was statistically significant (F=4.22; p= .00), with the adjusted r-squared value revealing that the combined predictors explained approximately eight percent (8%) of the variation in stress scores.

Table 14: *Initial Regression Model*

Variable	β	SE	Significance
Gender	.04	.17	.53
Ethnicity	.03	.44	.60
Education	.09	.16	.09
Marital Status	.03	.16	.60
Age Range	-.27**	.08	.00
Conservation experience	.45**	.05	.00
Prior police experience	-.00	.24	.98
Prior military service	-.04	.23	.45
Adjusted R ²	.08		

*p<.05; **p<.01

With that said, only age range ($\beta = -.270$) and conservation experience ($\beta = .45$; $p = .00$) emerged as being statistically-significant predictors, providing a moderate amount of support for H₆ through H₁₂ under research question four.

The beta value for *age range* ($\beta = -.27$; $p = .00$) indicated that as age increased officers reported lower overall stress (as gauged by the PSQ-Op scores). In contrast, the beta value for *conservation experience* ($\beta = .450$; $p = .00$) revealed that stress levels were higher among officers with longer tenures on the job. To further assess this seemingly contradictory finding, a second model was computed that explored multiplicative effects between *age range* and *conservation experience*.

Table 15: *Regression Model with Interaction Term*

Variable	β	SE	Significance
Gender	.03	.17	.60
Ethnicity	.03	.44	.55
Education	.09	.10	.09
Marital Status	.00	.16	.92
Age Range	.08	.19	.68
Conservation experience	.76**	.11	.00
Prior police experience	.00	.23	.84
Prior military service	-.03	.23	.59
Age*Conservation Experience	-.62*	.03	.04

* $p < .05$; ** $p < .01$

The results from model 2 (table 15) indicated that *conservation experience* retained its significance ($p = .00$; $\beta = .76$), though *age range* ($p > .05$; $\beta = .08$) failed to reach this threshold. With that said, the interaction term (*age range x conservation experience*) was significant ($p = .00$; $\beta = -.62$). Upon further exploration of this term, it was revealed that age range functioned to moderate the impact that conservation experience had on stress. That is, as conservation experience

increased, so did stress; however, increases in age served to reduce this effect. All other predictors included within the model failed to reach statistical significance (similar to the initial model). That said, the direction of their relationship with the dependent variable merits some attention here. These directions (e.g., gender, ethnicity, etc.) trended as hypothesized. The results provide some indication that each of the included measures may influence stress in a manner consistent with the findings from studies focusing on general police stress (and not specific to conservation officers).

Finally, recall that the final hypothesis sought to address whether white, female officers reported the highest levels of stress. Unfortunately, the obtained sample was overwhelmingly male and white, which could negatively influence any results obtained from generating a model assessing an interaction between those two measures. As such, the linear regression model testing for multiplicative effects between gender and ethnicity was not computed.

Chapter Summary

This chapter served to provide a comprehensive breakdown of the results of the various statistical models used to test the study hypotheses. Partial support was found across these models. The regression analysis provided only moderate support for the hypotheses under research question four (H₆ through H₁₃). More specifically, they revealed that *age* and *experience* possessed some predictive power in regards to stress, though the relationship seemingly functioned inversely. The other variables measuring individual officer characteristics shared no significant relationship with the dependent variable, though these relationships generally trended in the hypothesized direction. Significant relationships were revealed, however, in relation to the employed t-tests. Results suggested that officers deemed general law enforcement duties to be more stressful than those conservation-specific in nature. Further, it was found that the frequency

of performing various duties played a role in how stressful officers found them. Specifically, officers who performed duties at a higher frequency found them to be more stressful than officers who performed them less frequently. Having covered these findings, attention is now turned to discussing their importance.

CHAPTER 5

DISCUSSION

Using a traditional police stress scale (PSQ-Op) created by McCreary and Thompson (2006), this study aimed to assess the degree to which conservation officers experience stress. Additionally, it sought to determine what specific duties (or aspects of conservation policing) are most taxing, and whether the frequency of performing a duty impacts how stressful an officer perceives it. Finally, it examined the influence of officer characteristics on stress perception in order to test the applicability of findings from previous studies to this unique form of policing. The previous chapter presented results from the various statistical analyses used to test the study's hypotheses. This chapter seeks to discuss the meaning and relevance of these findings within the context of the police stress literature. In addition, it discusses limitations of the study, its' policy implications and potential directions for future research.

As previously discussed, McCreary and Thompson (2006) created a scale addressing the various nuances involved in the occupation of policing. This study, focusing on inherent stress and the factors that influence, used their scale to gauge the level of stress exhibited among a sample of 342 conservation officers from six states situated throughout the United States. Its initial research question and related hypotheses (H_1 and H_2) sought to determine whether conservation officers experienced inherent stress, the degree to which they did so, and whether officers rated physical dangers as the highest-rated stressors (compared to other assessed items).

Descriptive statistics revealed a mean PSQ-Op score of 3.45, which indicates that officers exhibited a level of inherent stress between somewhat stressful (3) and moderately stressful (4). This provided partial support for H_1 , as the mean stress score did not quite reach the hypothesized moderate (approximately 4.0) level. While this study was the first to apply the

PSQ-Op to a cohort of conservation officers, past research has utilized it to assess stress levels among other types of officers (McCreary, Fong, & Groll, 2017; Maran Varetto, Zedda, & Ireaci, 2015; Page & Jacobs, 2011). Because of this widespread use, McCreary et al (2017) set out to establish guidelines for interpreting standardized scores obtained from the scale. This was achieved through survey data provided by 2,300 “traditional” police officers. The researchers found a mean overall score of 3.26 for this group, which is slightly lower than the value (M=3.45) obtained for the current sample.

In addition, they established lines of distinction for interpreting scores on the PSQ-Op (McCreary et al., 2017). It was determined that when a cohort of officers reaches the standardized mean score of 3.5, then that group could be considered to be exhibiting high levels of stress. While this study’s sample did not reach that threshold, the proximity of the observed value (M=3.45) suggests that conservation officers may be exhibiting relatively high levels of stress. Further support for this assertion can be derived by reviewing the work of Maran et al (2015), who found a mean PSQ-Op score of 3.20 among a different sample of traditional officers. Taken together, the results of these other works suggest that conservation officers are experiencing relatively high levels of inherent stress related to various aspects of their occupation.

Determining why this is the case requires an examination of the stressors that conservation officers find to be most taxing. This was achieved in the current study by assessing mean scores for each of the items included in the PSQ-Op. Findings revealed that the highest-rated stressor was work-family conflict related, which is in line with the results of two qualitative studies conducted by Eliason (2014; 2016). Recall from the review of the literature that he found officers voiced discontent when the demands of their job impacted their ability to spend time

with their family (2016). Furthermore, of the top ten highest-rated stressors observed for the current sample, five involved some aspect of the officer's private life (e.g., time away from family (4.27), always on the job (4.27), long work hours (3.84) , over-time demands (3.61), and managing social life (3.49)) being affected by their occupation. More generally, these findings are also in line with the traditional police stress literature, which tends to find that emotional and physical burnout related to employment translates to stress associated with the private lives of officers (Hall et al., 2010; Howard et al., 2004; Jackson & Maslach, 1982; Martinussen et al., 2007).

Officers included in the current study were also tasked with rating perceived stress associated with various duties, including those general in nature and those more specific to the work of conservation policing. Recall from the review of the literature that conservation officers are now being tasked with a wide range of duties, including those that traditionally fell to municipal and county-level agencies (Falcone, 2004; Patten et al., 2015; Sherblom et al., 2002). It has been hypothesized that this shift may serve to influence levels of stress, as those drawn to conservation policing seek to fulfill duties unique to that career path. Analyzing data provided by sampled officers suggested that this may indeed be the case, as descriptive statistics revealed that five of the top six highest rated duty-stress items fell under the general law enforcement category (supportive of H₃).

Assessing the frequency of duty performance only added further credence to this proposition. That is, despite officers rating most general law enforcement duties as presenting high levels of stress, those same duties were among the least frequently performed. For example, officers rated drug-related encounters (2.72) and testifying in court (2.25) as the least frequently

performed duties. In spite of that, both duties were among the highest rated stressors according to officer responses (mean scores of 3.21 and 3.16, respectively).

Of added interest, and across all duty categories, officers who performed a duty more frequently were more likely to perceive that duty as causing higher levels of stress. This suggests that the sheer fact that an individual is required to commonly carry out a task may play a role in how stressful they perceive it to be (which is supportive of H₄). Despite a dearth of research in respect to duty performance frequency and stress, some support for this finding can be found in the extant literature. For example, Violanti et al. (2016) revealed that while most officers are not exposed to stressful events frequently—such as seeing a dead body—those who are exposed *more often* suffer a higher number of adverse consequences, though this can vary between individual officers.

Along the same line, past studies have found certain characteristics to influence perceived stress, several of which were assessed in the current work. It was hypothesized that gender, marital status, ethnicity, age, conservation experience, education, and prior police and military service would influence perceived stress levels. However, results from the initial linear regression model revealed that only age and conservation experience were significant predictors of stress among the sample. Age featured a negative relationship with stress, whereas higher levels of experience correlated with an increase in stress scores.

To further examine this seemingly contradictory relationship, an additional model was computed which contained an interaction term between the two measures (alongside the other predictors). Results indicated that age may serve to moderate the impacts of experience. Put differently, though experience worked to increase stress, officer age played a role in decreasing this impact. Within the context of previous research, this finding was rather unique. Most

previous analyses tended to find that a curvilinear relationship exists between age or experience and perceived stress (see Gatcher et al., 2001; He et al., 2005 for examples). While not completely different, the results from this analysis, however, revealed that age and experience did not share a uniformly curvilinear relationship with stress. One potential explanation for the moderating effect of age on conservation experience may be related to the type of stress being examined. That is, more experienced officers have a higher likelihood to have faced high-stress incidents throughout their career, though their aging, nearing retirement, and typically less field-work exposure function to moderate the impact of those past encounters (Gershon et al., 2008; Tsai, et al., 2017; Zhao et al., 2002).

In spite of the fact that all other officer characteristics failed to share statistically-significant relationships with stress, the direction in which most trended was largely in line with the study hypotheses. This provides some indication that the factors commonly found to influence stress among other types of officers may also play a role in conservation policing. However, determining whether this is the case (or if the characteristics are simply not as influential with this group) requires additional analysis involving other samples of conservation officers.

Policy Implications

Several policy implications emerge from the findings of this study. First, results revealed that the stress associated with conservation policing serves to impact various aspects of officer's private lives (e.g., relationships with family). Research pertaining to work-family conflict suggests that when an officer's professional life begins to impede on their private life, stress or individual burnout can manifest as a consequence (Hall et al., 2010). Not only that, but it has also been well established that burnout reduces officer commitment to their agency, which in

turn serves to decrease work efficiency (Jackson & Maslach, 1982; Howard et al., 2004). While work demands are inherent within any occupation, it is important to ensure that officers are not experiencing high levels of burnout through role overload. It is conceivable that role overload—through expectations to perform both general and conservation specific duties—may be a problem now faced by conservation officers.

Further, officers surveyed in the current study reported that general law enforcement duties led to higher levels of stress than those conservation-specific in nature. One practical consideration to draw from this would be better consistency in assigning duties in an attempt to provide some balance to officers. In addition, it may be beneficial for conservation agencies to rely on outside law enforcement agencies to aid in performing general policing functions to the degree possible, though this is likely to require coordinated lobbying efforts at the state and local levels.

Further, departments could also strive to revise job advertisements and training to reflect the changing nature of conservation policing. As Patten et al (2015) discovered, training and duty expectations widely vary among states. Some require biological expertise, whereas others have shifted priority towards more of a police-training model. Those favoring the latter model have come to the realization that the career field is changing, and seek to assist their officers in confronting those demands. Since many officers still enter the field out of a desire to protect wildlife (Eliason, 2016), these changes may not only prepare them to handle general duties, but provide them with an understanding from the onset that they will be asked to undertake them.

Limitations

While this study offered much to our understanding of stress among conservation officers, it is not without its limitations. First, the obtained sample lacked diversity in that it was

primarily comprised of white, male officers. This undoubtedly served to impact the ability of the employed models to determine the impact of gender and ethnicity on perceived stress. It is possible that other samples may alleviate this limitation. However, in comparison to other studies of conservation officers (e.g., Eliason, 2014; Oliver & Meier, 2006), the makeup of the current sample features similar demographic characteristics.

The second limitation relates to the job duties that officers were asked to respond to in terms of duty frequency and stress. The eleven included items were primarily drawn from Shelley and Crow's (2009) work detailing the tasks commonly assigned to officers. Because their work was restricted to accounts from a single state (Florida), tasks may not translate to the work of conservation officers nationwide. To account for this, some general duties—like an “alcohol-related encounter”—were included. Though beneficial, the broad wording of these included categories may have influenced responses, as the term “encounter” may not be viewed similarly by all respondents.

The final limitation relates to the use of McCreary and Thompson's (2006) PSQ-Op to assess overall stress levels. The scale was developed through consultation with various urban policing agencies and their officers. Adopting the survey for the current study required that some examples pertaining to the response items be altered to better fit the occupation of conservation policing. It is possible that doing so served to influence the results. For example, one item asked officers about the impact of the occupation on their health, with examples such as “blood pressure” and “chronic conditions” being provided. Officers with high blood pressure, then, may have felt compelled to report a higher stress score even if their condition was not related to occupational stressors.

Directions for Future Research

Although this study identified the presence of inherent stress among conservation officers, future researchers should extend this line of inquiry to include the impacts of organizational stress. It has been found that organizational stress can precipitate burnout among traditional officers (Shane, 2010), and it is plausible to presume that similar results would be witnessed for conservation officers. In fact, some research contends that traditional police officers often find organizational stressors to be more burdensome (Chae & Boyle, 2013). In addition, they should further examine the degree to which officer characteristics predict various forms of stress. The demographics of the current sample prevented a valid test of the relationship between stress and factors such as gender and ethnicity. It is possible that a different sample may allow for a better understanding of these relationships.

Future researchers may also consider utilizing a different police stress scale to determine whether the results obtained in the current study are replicable via a different measurement tool. For example, a scale that does not include social influences and only those items specifically pertaining to inherent police stress may yield lower overall mean stress scores. Further, future researchers may seek to develop a survey designed specifically for the field of conservation policing through consultation with multiple agencies and officers. It may also be beneficial to query officers directly—though still quantitatively—on their perceptions about the changing nature of the occupation. While the current study did so through indirect means, a more direct approach may reveal unique findings that can benefit our understanding of the impact of this shift.

Conclusion

In spite of the limitations associated with the current study, it offers much to our understanding of conservation officer stress and the various factors that serve to influence it. To date, the majority of research within the field has taken a qualitative approach and/or relied up geographically limited samples. This work sought to fill those gaps in knowledge via assessing officer stress through an established stress scale and by surveying officers located across the U.S. As such, its findings should be generalizable and allow for comparisons between conservation officers and those employed in more traditional police roles (in terms of perceived stress). In addition, it is hopeful that the work will prompt additional inquiry into the lives and experiences of conservation officers, as the ever-changing nature of their occupation merits it.

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APPENDIX

Survey Instrument for Conservation Officers

The following section will ask you to tell me a little about yourself. Remember, any answers you provide will be anonymous.

Please select the answer that *best* applies to you:

1. What gender are you?

Male Female Other_____

2. What is your age range?

21-29 30-38 39-47 48-56 56+

3. What is your ethnicity?

Non-Hispanic Black Non-Hispanic White Hispanic Asian Native American Other_____

4. What is the highest level of education you have achieved?

Less than High School

High School Diploma/GED

Some College (no degree)

Associate's Degree (or technical degree)

Bachelor's Degree

Master's Degree

Doctoral or Professional Degree (e.g., Ph.D, Juris Doctor, etc.)

Other_____

5. What is your marital status?

Single/Unmarried Married Separated Divorced Widowed

6. Which state do you work in? (Drop down box containing all states)

- 7. Have you ever served in the military?
 Yes
 No
- 8. Were you a police officer prior to becoming a conservation police officer?
 Yes
 No
- 9. If you were a police officer, how many years? (If no, skip to the next question)
 1-2 3-4 5-6 7+
- 10. How many years have you worked as a conservation police officer?
 Less than one year
 1-3 4-6 7-9 10-12 13-15 16+

Below are some statements that pertain to varying aspects of being a conservation officer.

For each item, circle the number that corresponds *best* with the level of stress it has caused you in the past **6 months** (1= not stressful at all, 2= a little stressful, 3=somewhat stressful, 4=moderately stressful, 5=pretty stressful, 6=stressful, 7=very stressful).

- | | | | | | | | |
|------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|
| 1. Long work hours | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Isolation (i.e., working alone/back-up not close) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Over-time demands (e.g., during summer, special occasions, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Risk of being injured on the job (e.g., dangerous encounters with animals, people, terrain, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Work related activities on days off (e.g., court, responding to emergencies or disasters, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Traumatic events (e.g., seeing death, comforting victims, shot at, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Managing your social life outside of work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Not enough time available to spend with friends and family | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- | | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|
| 9. Paperwork | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Eating healthy at work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. Finding time to stay in good physical condition | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. Fatigue (e.g., physical job demands, emergency response, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Impact of occupation on health (e.g., blood pressure, chronic conditions, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Lack of understanding from family or friends about your work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. Making friends outside the job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. Upholding a “higher image” in public | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. Negative comments from public (e.g., park goers, hunters, media criticism, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. Limitations to your social life (e.g., who your friends are, where you socialize, using social media, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. Feeling like you are always on the job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. Friends/family feel the effects of stigma associated with your job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

This section will ask you about your job as a conservation officer. Remember, any answer you provide will be kept anonymous.

For each item, circle the number that *best* corresponds with the level of stress it has caused you in the past **6 months**: As a guide, each number represents the following: 1= not stressful at all, 2=a little stressful, 3=somewhat stressful, 4=moderately stressful, 5=pretty stressful, 6=stressful, 7=very stressful. If you have never participated in or experienced any of following categories, please select N/A:

- | | | | | | | | | |
|-------------------------------------------------------------------------------------|-----|---|---|---|---|---|---|---|
| 1. Assisting other law enforcement agencies (e.g., with arrests, searches, etc.) | N/A | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Drug-related encounters (e.g., users, growers, sales of, etc.) | N/A | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Serving warrants | N/A | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Alcohol-related encounters (e.g., underage drinking, intoxicated visitors, etc.) | N/A | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Traffic infractions (e.g., unauthorized access to roads/use of vehicles, etc.) | N/A | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Responding to emergencies (e.g., fires, injured visitors, etc.) | N/A | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- 7. Illegal disposal of waste (e.g., chemicals, trash, appliances, etc.) N/A 1 2 3 4 5 6 7
- 8. Vandalism (e.g., destruction of property, signs, etc.) N/A 1 2 3 4 5 6 7
- 9. Testifying in court N/A 1 2 3 4 5 6 7
- 10. Enforcing park policies (e.g., failure to pay fees, prohibited camping, dogs off leash, etc.) N/A 1 2 3 4 5 6 7
- 11. Enforcing wildlife and fishing game laws (e.g., boating, hunting, fishing) N/A 1 2 3 4 5 6 7

Beside each item in this section, select the number (which progress from 1= never to 6= very frequently) that *best* corresponds with how frequently you have performed each duty over the past **6 months**:

- 1. Assisting other law enforcement agencies (e.g., with arrests, searches, etc.) 1 2 3 4 5 6
- 2. Drug-related encounters (e.g., users, growers, sales of, etc.) 1 2 3 4 5 6
- 3. Serving warrants 1 2 3 4 5 6
- 4. Alcohol-related encounters (e.g., underage drinking, intoxicated visitors, etc.) 1 2 3 4 5 6
- 5. Traffic infractions (e.g., unauthorized access to roads/use of vehicles, etc.) 1 2 3 4 5 6
- 6. Responding to emergencies (e.g., fires, injured visitors, etc.) 1 2 3 4 5 6
- 7. Illegal disposal of waste (e.g., chemicals, trash, appliances, etc.) 1 2 3 4 5 6
- 8. Vandalism (e.g., destruction of property, signs, etc.) 1 2 3 4 5 6
- 9. Testifying in court 1 2 3 4 5 6
- 10. Enforcing park policies (e.g., failure to pay fees, prohibited camping, dogs off leash, etc.) 1 2 3 4 5 6
- 11. Enforcing wildlife and fishing game laws (e.g., boating, hunting, fishing) 1 2 3 4 5 6

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Academic Publications: Edwards, B., Osborne, D.L., Moses, R., Ledford, L., & Smith, G. (Under Review). *Municipal police department's use of Facebook: Exploring the potential for differences across size classifications*. Submitted to the American Journal of Criminal Justice.

Osborne, D.L., Edwards, B., Ledford, L., Moses, R., & Smith, G. (In Preparation). *Facebook use among law enforcement agencies: Comparing sheriff's offices and municipal departments*.

Ledford, L., Edwards, B., & Osborne, D.L. (In Preparation). *Assessing the relationship between duty performance and perceived stress among conservation officers*.

Edwards, B., Osborne, D.L., Smith, G, Ledford, L., & Moses, R. (In Preparation). *Motivations of Facebook usage among rural municipal departments*.

- Conference Presentations: Ledford, L. & Osborne, D. (2019). *An exploratory study of duty-related stress among conservation officers*. Southern Criminal Justice Association Annual Meeting: Nashville Tennessee
- Edwards, B., Osborne, D.L., Moses, R., Ledford, L., & Smith, G. (2019). *Exploring Facebook use among municipal police departments in Tennessee*. Southern Criminal Justice Association Annual Meeting: Nashville, TN.
- Honors and Awards: Distinguished Undergraduate Student, Criminal Justice & Criminology, East Tennessee State University
- Magna Cum Laude, East Tennessee State University (2018)
- Dean’s List (2015-2018)
- Service: Vice President, Alpha Phi Sigma, East Tennessee State University (2017-2018)
- Secretary, Criminal Justice Society, East Tennessee State University (2017-2018)
- Professional Affiliations: Criminal Justice Honor Society (Alpha Phi Sigma) (2017-Present)
- Southern Criminal Justice Association (2019-Present)