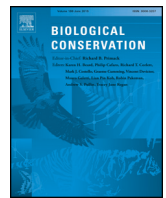




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# What do conservation biologists think about their job and working conditions?

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## ABSTRACT

Most conservation biologists appear to enjoy their careers. However, conflicts between family and work interests can cause burnout, job dissatisfaction, and increased intentions to quit. We conducted questionnaire surveys among 92 conservation biologists attending a regional conference in Asia to investigate (1) what aspects of their jobs conservation biologists like or dislike, and (2) how conflicts between family interests (including activities focused on children, spouses and significant others, parents and other relatives, and activities related to these) and work interests affect job satisfaction and the intentions of conservation biologists to leave their jobs or the field of conservation biology. At work, conservation biologists most enjoyed fieldwork, research opportunities, interactions with people, and a sense of freedom; they most disliked raising and managing funds, working under stressful conditions with tight deadlines, and performing administrative responsibilities. Conservation biologists in our sample generally reported high levels of job satisfaction; however, many also reported that work frequently interfered with family activities, that they were disengaged with their work, and that they intended to search for another conservation biology position or leave the field entirely. Importantly, burnout (exhaustion and disengagement) was a key mediator between work–family conflicts and job satisfaction; that is, when work–family conflicts led to burnout—which happened frequently—people were more likely to be dissatisfied with their jobs and to consider quitting. Conservation biologists and their supervisors should consider taking steps to create healthier work environments—e.g., improve training, transparency about job duties, and family-friendly workplace policies. Engaged and emotionally balanced conservation biologists are likely to be more effective in their efforts to conserve Earth's biodiversity.

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## 1. Introduction

Working adults all face the challenge of balancing the competing demands of work and personal life (Ramos et al., 2012). Scientists are particularly challenged because of expectations of high performance and workload, and the normative expectation for scientists that work takes precedence over other interests (MacKenzie et al., 1998; Bailyn, 2003; Post et al., 2009). Conservation biologists may face even greater challenges because they believe their work is critical to protecting biodiversity.

Prolonged exposure to chronic stressors at work, like those experienced by many conservation biologists and other scientists, leads to burnout—physical, emotional, and mental exhaustion (Maslach et al., 1997). Burnout can be split in two dimensions: exhaustion and

disengagement. Exhaustion, or extreme fatigue, arises from prolonged physical, emotional, and cognitive strain (Demerouti et al., 2003). Disengagement involves the intensive emotional, cognitive and behavioral rejection of one's work and job (Freudenberger, 1974). People who experience burnout are more likely to feel dissatisfied with their work (Lizano and Barak, 2015) and quit their jobs (Maslach et al., 1997). Work–family conflict is positively associated with burnout in a broad range of occupational groups (Greenhaus and Beutell, 1985; Innstrand et al., 2008). Burnout from work–family conflict is an issue of concern among conservation biologists and ecologists (McGuire et al., 2012; Campos-Arceiz et al., 2013), and could have a negative impact on gender diversity in high-level jobs in the field if women experience a higher level of work–family conflict due to greater time commitment to child care and other family responsibilities (e.g. McGuire et al., 2012; Cho et al., 2014).

Typically, conservation biologists work in a range of government, non-government, and academic institutions. Many of these conservation biologists are passionate about nature and conserving biodiversity (e.g. Bickford et al., 2012) and, presumably, enjoy their work in conservation.

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Yet, workloads may be growing for many conservation biologists due to the increasing institutional demands of administrative tasks, teaching, grant writing, and publishing, as well as the need to engage with the public (e.g. Mamiseishvili and Rosser, 2011).

In a previous editorial (Campos-Arceiz et al., 2013) we wondered whether conservation biologists are “working too hard”. Our analyses showed that in trying to meet work demands, many conservation biologists do a considerable portion of their work on weekends and evenings. For many conservation biologists, additional work hours come at the expense of family life, that is, time spent with family, as well as time with friends and time for rest, hobbies, physical exercise, and other non-work activities (Campos-Arceiz et al., 2013). If left unchecked, work-family conflicts can lead to burnout, including exhaustion and disengagement from work, and can result in the decision to leave a particular position or the field of conservation biology.

Here we aim to better understand the working conditions of conservation biologists. We recently surveyed attendants at a major conservation biology conference (the Society for Conservation Biology, Asia Section) and analyzed their responses with two specific objectives: (1) to explore what conservation biologists like and dislike most about their jobs, and (2) to examine the relationship between work-family conflict and conservation biologists' job satisfaction and intention to leave their jobs or the field of conservation biology. We use the Koeske and Koeske (1993) stress-strain-outcome model of burnout as the theoretical basis for our study. The stress-strain-outcome model suggests that the relationship between work-family conflict, burnout, and the outcomes follow the following pattern: work stressors (work-family conflict) → strain (burnout) → outcome (job dissatisfaction, intention to quit). We therefore hypothesize that conflicts between work and family lives lead some conservation biologists to burnout, which, in turn, decreases their job satisfaction and increases their intentions to quit. While this study focuses on conservation biology, we expect our results to be more broadly relevant to the fields of ecology, environmental science, forestry, and wildlife management.

## 2. Methods

### 2.1. Data collection

We provided a hard copy of the questionnaire to attendees registering at the Third Regional Conference of the Society for Conservation Biology, Asia Section (SCBAsia 2014), held in the Malaysian city of Melaka, on 19–22 August 2014. Participants deposited completed questionnaires in collection boxes available at the conference venue. The questionnaire (see online supplementary material) consisted of five parts: (1) demographic information about respondents, and measures of (2) work-family conflict (including conflict of work with family activities and other personal activities outside of work), (3) burnout (including exhaustion and disengagement), (4) job satisfaction, and (5) intention to quit. We also included two open-ended questions about what respondents most liked or disliked about their jobs as conservation biologists. We analyzed 92 completed questionnaires from people who self-identified as conservation biologists.

We measured work-family conflict using two scales adapted from Grzywacz and Marks (2000): work interfering with family lives (e.g., long work hours or business trips disrupting time with family) and family life interfering with work (e.g., time with children disrupting work activities). Both scales consisted of four items each and were measured using a 5-point likert scale (1 = “never” to 5 = “all of the time”). Reliability coefficients (Field, 2013) for this particular study were 0.75 for work interfering with family life and 0.80 for family life interfering with work. Reliability coefficients measure the internal consistency of a test in a range of values from 0 to 1, with higher values indicating higher reliability.

We measured burnout using the Oldenburg Burnout Inventory (Demerouti et al., 2010). The scale measures two dimensions of

burnout: exhaustion (feeling physically and emotionally tired) and disengagement (not caring about work; 8 items each). Responses range from 1-“strongly agree” to 4-“strongly disagree”. Reliability coefficients for this particular study were 0.53 for exhaustion and 0.70 for disengagement. Reliability values greater than 0.6 are generally preferred, but for shorter scales and small sample sizes (like in our study) 0.53 is considered acceptable (Field, 2013).

We measured job satisfaction using a 3-item scale adapted from Hackman and Oldham (1974). Responses ranged from 1-“strongly agree” to 4-“strongly disagree”. The scale had a reliability coefficient of 0.75. In this section we also included two open-ended questions: (1) “What do you like the most from your job?” and (2) “What do you dislike the most?”

Intention to quit was measured using a 5-item bespoke scale adapted from Jenkins (1993). Responses ranged from 1-“strongly disagree” to 4-“strongly agree”. The scale had a reliability coefficient of 0.86.

### 2.2. Data analysis

We used SPSS v20 to encode and analyze our empirical data. We tested our hypothesis using the principles of mediation analysis as outlined by Preacher and Hayes (2004, 2008) and Preacher et al. (2007); see details in online supplementary material).

We analyzed the two open-ended questions using text mining, an approach that allows the highlighting of the most frequently used keywords by the respondents. Before the analysis, we cleaned the text to remove common English stop words (terms that lack information such as “the”, “with”, “for”, etc.), to remove our own stop words (terms that were part of the questions but did not provide relevant information such as “work” and “like”), and to reduce words to their stem (i.e. removing suffixes so that terms like “funding” and “funds” are considered together as “fund”). We used R language for statistical computing (version 3.2.0; R Core Team, 2015) to mine text (see online supplementary material for more details on text mining procedures).

## 3. Results

### 3.1. Demographics

Our respondents ( $N = 92$ ) were on average  $36 \pm 10$  (SD) years old and reasonably balanced by gender and marital status; about one quarter of the respondents had children (Table S1 in the online supplementary material). Our sample included people from 23 countries and six continents although most of the respondents were Asian (58%) or affiliated with an Asian institution (77%). Our respondents had generally a high level of education (97% had a university degree) and most worked for a nongovernmental organization (NGO), an academic institution, or were students (Table S1). Excluding students, the majority were middle and senior managers in their organizations (Table S1). Our respondents reported that they worked an average of  $51 \pm 15$  h per week; differences between groups in their average hours of work per week showed interesting but not significant patterns (Table S1). It is interesting to note that 51 h is 11 h per week more than the standard 40 h per week, and might mean respondents work more than 10 h per day rather than the standard 8 h per day.

### 3.2. Descriptive findings

The conservation biologists in our study had a mean overall burnout score of  $2.9 (\pm 0.3)$ ; Fig. S1) out of a possible 4.0. The mean scores for each of the dimensions of burnout were  $2.5 (\pm 0.4)$  for disengagement and  $3.4 (\pm 0.3)$  for exhaustion (Fig. 1). For example, 34% of respondents reported feeling sometimes disconnected from work, and 41% reported that their job did not give them adequate energy for leisure activities. On the other hand, 91% felt that their work provided a positive challenge

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