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# Assessing biodiversity conservation conflict on military installations

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ABSTRACT

Conflict over endangered species conservation on military lands is becoming increasingly important as militaries attempt to balance an increased operational tempo with endangered species conservation. Successfully managing this conflict has major implications for biodiversity conservation given the US military alone manages over 12 million ha of land providing habitat to hundreds of at risk species, 24 of which are endemic to military installations. This paper provides the first assessment of this issue with a qualitative study of military trainers and civilian natural resource professionals who are employed by the Department of Defense (DoD) at the interface of endangered species conservation and troop training on installations throughout the Southeastern US. Emerging conflicts over endangered species conservation on DoD lands differed from non-military contexts because military structure forced interactions into strict protocols allowing avoidance, but not direct contention. Although all informants officially stated nothing impacted training, training area supervisors described endangered species conservation the greatest threat to training they faced. Despite pointed efforts to avoid engagement and official denial that conflict existed, interactions between the groups were characterized by deindividualization and communication breakdown, residues typically associated with highly escalated conflicts. These findings suggest suppressing conflict may create the same negative outcomes typically associated with prolonged direct conflict, by denying parties the ability to resolve differences. These negative outcomes can be addressed by both acknowledging biodiversity conservation conflict exists and allowing dissent during decision-making. Improved cooperation between TASU and NRECM can help reduce impacts of warfare on wildlife conservation, while ensuring sustainability of military training on lands critical to biodiversity conservation.



## 1. Introduction

The relationships between people and their environments represent a core element of biodiversity conservation (Chan et al., 2007); yet social issues are addressed less commonly than ecological issues in conservation biology scholarship (Chan et al., 2007). A growing body of literature addressing conflict over biodiversity conservation is starting to fill this gap. Biodiversity conflict reflects disputes between stakeholders over the goals and priorities for conservation (Marshall et al., 2007). Studies have addressed biodiversity conservation conflict in a wide range of socio-cultural contexts including protected areas management (Pimbert and Pretty, 1995; West et al., 2006), endangered species regulation (Peterson et al., 2002), and the use of public lands (Benson, 2004), but few if any have addressed biodiversity conservation conflict in military contexts. Although some literature does address military environmental views (Coates et al., 2011), it does not address the internal divide between military environmental managers and military operators.

This lack of research represents a conspicuous gap given the land base controlled by the world's militaries, and the global impacts of warfare on biodiversity conservation (Machlis and Hanson, 2011; Hanson, 2011). It is unknown how many hectares are used globally for military training, but the United States Department of Defense (DoD) alone utilizes more than 12,140,569 ha and owns over 2,202,735 ha of land, in 63 countries, hosting diverse ecosystems that sustain high levels of biodiversity (Stein et al., 2008). Military installations represent a critical element of biodiversity conservation due to their large size and the tendency for military groups to strictly regulate human behaviors on their land (Vanderpoorten et al., 2005; Boice, 2006). Military activities prevent land use changes (e.g., subdivision) often allowed on other lands. Accordingly, military installations often present snapshots of what the landscape looked like when the installations were created (Cohn, 1996).

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In 2004, the DoD funded a study (Stein et al., 2008) that reported 523 at risk species on 224 DoD installations. Of these species, 47 were candidates for listing under the Endangered Species Act (ESA) with 24 endemic to individual DoD installations. The study concluded that for 82 species, half of their worldwide occurrences are found only on individual installations. The biodiversity on military installations is not a matter of coincidence. In the US, government policies have contributed to cultural and historical trends promoting biodiversity on DoD lands. The Sikes Act of required DoD installations to manage for wildlife habitat while section 7 of the ESA of 1973 gave unprecedented authority to wildlife conservation experts on military lands by prohibiting training actions that could harm endangered species. In 1986, the federal government passed an addition to the Sikes Act that required each installation "to use trained professionals to manage the wildlife and fishery resources under their jurisdiction, and required Federal and State fish and wildlife agencies be given priority in management of fish and wildlife activities on military reservations" (Sikes Act, 2004). These wildlife professionals work to ensure installations remain in compliance with the ESA, and thus avoid training restrictions that can be imposed if the U.S. Fish and Wildlife Service were to decide that military actions are jeopardizing an engendered species (i.e., write a jeopardy biological opinion against an installation) (U.S. Army Environmental Command, 2009).

During periods of military direct-action conflict (e.g., 2001–2011), exemptions to environmental laws can be granted in order to expedite military training (Babcock, 2007). This combined with increased training demands can pit endangered species conservation against military preparedness. Conflict over endangered species conservation on DoD lands became increasingly important in the first decade of the 21st century. Understanding this conflict is essential for improving conservation efforts both inside and outside installations. Further, the emerging trend of military installations attempting to engage nearby private landowners in endangered species conservation contracts (Sorice et al., 2011) means that military biodiversity conservation conflict may have implications for large areas of private land extending beyond installation boundaries.

Cultural differences rooted in the fundamental objectives of the parties to biodiversity conservation conflict on military installations present unique management challenges. Military operators, including training area supervisors and users (TASUs) are immersed in war fighter culture (Dunivin, 1997), focused on making rapid, difficult decisions in pursuit of national defense. Civilian natural resource and environmental compliance managers (NRECMs) are full time natural resource professionals employed by the DoD to be responsible for endangered species conservation. Most (NRECM) come from an environmental management background (e.g., forestry, fisheries and wildlife, civil engineering) and are responsible for environmental compliance and endangered species conservation. Although they may personally have service experience and be sympathetic towards war fighting goals, their organizational objectives are typically rooted in a culture focused on preserving, protecting and maintaining biodiversity (Coates et al., 2011). This context reflects other biodiversity conservation conflicts, such as those involving the Spotted Owl (Yaffee, 1994) or the Florida Key Deer (Peterson et al., 2002), where the divergent cultures promote fundamentally different values and morals. Cultural differences can encourage the development of incompatible aspirations, influence whether conflict surfaces (because some cultures avoid it while others embrace it), influence which potential strategies parties use to achieve their goals (e.g., avoidance, contentiousness, accommodation, or problem solving), and promote conflict escalation (Pearce and Littlejohn, 1997; Bodtker and Jameson, 2001; Rubin et al., 2004). This process can eventually lead to reinforcing mechanisms (e.g., unwillingness to attempt communication with opposing parties) that serve to perpetuate the conflict (Northrup, 1989). In this paper we begin to address the need for research on biodiversity conservation conflict on military installations with a qualitative study of conflict between TASU and NRECM who work at the interface of endangered species conservation and troop training on DoD installations throughout the SE US.

### 1.1. Background

The Southeastern (SE) United States presents a good context for studying the evolution of biodiversity conservation conflict on military lands both because conflict over management of the endangered red cockaded woodpecker (RCW, *Picoides borealis*) has occurred for over 30 years on military installations, and because the region is home to a large, and growing, military force. DoD reported that the SE States of Tennessee, North Carolina, South Carolina, Georgia, Alabama and Florida are home to 66 DoD installations and 421,140 personnel (Army Environmental Division, 2009). Shifts in internal military structure such as those associated with the decisions of the Base Relocation and Closure Commission coupled with changes in training methods have made this region a hub for troops and training as bases were being phased out elsewhere in the US.

Increased troop numbers, expanded training area needs, rapid deployment schedules associated with wars, and the focus on military installations as core areas for RCW conservation have exacerbated longstanding tensions over how to balance training and endangered species conservation on SE Military Installations. In 2007, former US president George W. Bush began "Grow the Force," a program that resulted in an additional 27,000 Marines and over 74,000 soldiers being added to the existing infrastructure (United States Governmental Accountability Office, 2008). The additional troops created the need for larger barracks, more dining facilities and other services, with installations internally encroaching upon themselves. At the same time the addition of new technologies resulted in the expansion of training area needs from the 90 $km^2$ footprint that most installations were based on in the early 1940s to the over 2500 $km^2$ needed by some brigades in the 2000s (Taphorn, 2003). Fort Bragg's 2001 Integrated Natural Resources Management Plan estimated it was facing "154,000 acres" of training land shortfall (INRMP, 2004). At the same time, suburban sprawl around installations progressively isolated endangered species on military lands. There are six primary installations with RCW populations that are at the core of recovery efforts, Eglin Air Force Base, Fort Bragg, Fort Polk, Fort Stewart, Fort Benning, and Marine Corps Base Camp Lejeune (U.S. Fish and Wildlife Service, 2008). The DoD has been the most effective federal agency in terms of recovering RCW populations with a 43% increase in RCW clusters from 1998 to 2006 on SE Army installations alone (Boyne, 2008).

Although TASU and NRECM do not dictate training and environmental priorities at a national level, they are the primary parties implementing activities designed to balance endangered species conservation with training on installations. TASU must prepare troops to use technology that requires larger ranges in progressively smaller training lands while NRECM must manage for and increase endangered species populations that reside on landscapes being progressively isolated from outside habitats through suburban encroachment around installations. Any disagreements between TASU and NRECM over biodiversity conservation are governed by military regulations (e.g., Army Regulation 600-20), which outline policy on conflict. Specifically, everyone under the DoD umbrella must address issues through the chain of command within their unit, by taking any problems to their direct superior,

who is mandated to have an open door policy. Although conflict policies are clearly articulated they may be underutilized due to stigma associated with asking for help with problems (Janowitz, 1974; Pershing, 2003).

## 2. Methods

We used a naturalistic qualitative approach (Lincoln and Guba, 1985; Denzin and Lincoln, 2005), which acknowledges and examines narratives from each informant, allowing themes to surface from the direct experiences of the informants to explore meanings and the processes studied (Lincoln and Guba, 1985). This qualitative approach was particularly useful for stepping beyond official positions to explore how informants experienced biodiversity conflict. Although existing literature on military sustainability notes endangered species conservation successes (Beaty et al., 2003), we wanted to move beyond the numbers of species saved and assess the social processes involved. We utilized triangulation as a means to minimize bias by comparing the themes that emerged from interview analysis to those emerging from participant observation and document analysis (Silverman, 2001). We collected data from 43 semi-structured interviews with 23 TASU and 18 NRECM that were conducted from September 2008 to March 2009. For our TASU group, we spoke with active duty soldiers and trainers and civilian trainers. Within NRECM, we drew from members of environmental compliance divisions within installations. Regardless of the military background of individuals within the two groups, they differed in that they were slated with very different organizational goals within the same installation. We worked with informants from multiple military branches and operating specialties within the SE US. We worked with informants from the five largest training installations in the SE US and several support bases. Interviews lasted from 30 min to 1½ h. We used a snowball sampling method starting with two key informants who were able to provide an initial contact list of TASU and NRECM. Interviews were recorded on a hand-held recorder with the written permission of the interviewee and additional notes were taken during the interview. Interviews were then transcribed into 161 pages and analyzed.

Although informants were allowed to determine the direction of the interviews, we used five interview prompts to elicit information about training and endangered species conservation: (1) what do you do for military? (2) what are the main objectives in your position? (3) do any environmental issues influence your ability to successfully meet those objectives? (4) how do you feel those objectives should be balanced with the environmental issues? (5) will you tell me about the most challenging environmental issue you have faced while working here? We designed the interview prompts to avoid direct mention of RCW or endangered species management so that these themes only emerged if informants believed they were actually important elements of training and environmental objectives.

We also collected data during informal interactions with informants from fall 2008 to winter 2009. We observed NRECM and TASU staff in meetings as the two groups worked to determine training and land use plans and also during social encounters between the two groups. Observations were tracked by recording date of encounter and making detailed written notes or by dictating field notes into a handheld recorder, which were then transcribed. We also collected data from a review of relevant documents and literature collected about the subject. Literature was provided by interviewees at the time of meetings and was gathered from military, civilian and government agencies.

All of our data was analyzed and coded using NVivo qualitative data analysis software (QSR International Pty Ltd., Version 8, 2008) and thematic content analysis (Anderson, 2007). We began by sorting our data from the transcripts and field notes into broad categories that illustrated a single coherent thought or theme, and then developed those themes by determining the significance, searching for opposition among themes, and developing thematic hierarchies. We use the following citation format to identify quotations from interviews: Pseudonym, Interview number. For example, a quotation identified as: (Joseph, I3) was spoken by Joseph during interview number 3. Quotations from field notes were attributed to speaker's pseudonyms when possible (e.g., Jordan, field notes) but otherwise were cited as field notes. Installation and branch names are withheld as participants were extremely sensitive regarding confidentiality.

## 3. Results

We found respondents typically chose to avoid direct engagement over incompatible interests instead of engaging directly in confrontation. Because respondents avoided direct engagement, explicit signs of escalating conflicts (e.g., arguments between informants) were not apparent. Despite clear recognition of incompatible interests and interference from each other in achieving their interests, both groups were forced to accommodate the other. This accommodation suppressed acknowledgment of underlying conflicts thus preventing use of existing military conflict management protocols based on chain of command. Despite the lack of direct conflict or traditional forms of escalation, we found several conflict reinforcing mechanisms typically resulting from protracted, escalated, direct conflict including de-individuation, mistrust, and unwillingness to communicate (Northrup, 1989). Informants identified avoidance, forced accommodation, and reinforcing mechanisms as ways they dealt with conflict over biodiversity conservation.

### 3.1. Avoidance

When asked if environmental issues impacted training, all informants immediately responded they did not. TASU responded to the query about compatibility saying, "there's no way we're not getting the training we need" (field notes), "we still get the mission done" (David, I4), "there's a reason we're the best Army in the world" (field notes), and "we train the way we fight" (field notes; James, I5; Henry, I11). No NRECM identified RCW or endangered species as a barrier to training when responding to the query about training barriers.

These compatibility claims were reflected in our document review where we found statements that RCW conservation was completely compatible with training. In the 2003 Senate Hearing on Environment and Public Works for the 108th Congress, Colonel Addison D. Davis said: "We currently meet our training goals without significant closures of training areas because of endangered species concerns." James Rappaport, Senior Vice President for Conservation Programs of the National Wildlife Foundation said that, "DoD has successfully worked with the ESA to achieve its military readiness objectives while conserving imperiled species" (Senate Hrg. 108-308, 2003).

Surprisingly, claims of compatibility between endangered species conservation and training were reversed by TASU during interviews. Although all TASU initially answered the question "do any environmental issues influence your ability to successfully meet those [training] objectives," by saying no environmental issues impacted training, when asked to share the most challenging environmental issue they had faced all but two TASU informants shared stories suggesting "woodpeckers" (Eric, I16; Thomas, I23; James, I5; field notes) were both a barrier to training and their

biggest environmental challenge. Kevin (I15) reported that even with modifications that allow some training in all areas, "you've still restricted [the soldier's] training. He cannot train – he still can't train like he fights." Eric (I16) called RCW his "own little version of bunnies and bugs from hell...they have the biggest impact on training lands here." When asked how RCW impacts training, Christopher (I3) commented that if "[there are RCW] in this one training area that we're trying to train in, we can't do it there," and he described how this negatively influenced training timelines.

Reversal of the official stance claiming complete compatibility between training and RCW conservation was also identified in our document review. In 2001 at the Senate Armed Services Committee Subcommittee meeting on Readiness and Management Support, Major General Hanlon, Commanding General of Marine Corps Base Camp Pendleton addressed the issue by saying that "[ESA] training restrictions and hindrances...prevent our East Coast [installations] from the opportunity to conduct realistic, meaningful training...[if this] continues, many of today's junior leaders may initially face the full challenges of combat, not during training but during conflict" (Senate Hrg. 107-737, 2001).

Woodpeckers were described as having a substantial impact on training and there was a fear that they would have an even greater impact in the future. One active duty trainer, Thomas (I23), argued that RCW conservation posed the most important challenge to training over the long term, and that "for the next ten years, this'll be our biggest challenge – to site new ranges within the confines of the woodpecker clusters and habitats." John (I7) said, "growing enough RCW clusters to meet our requirements would take away 90% of the ... training area" (field notes). In a 2003 Senate Hearing, Colonel Addison David, Garrison Commander of Army Installation Fort Bragg in North Carolina said that, "Fort Bragg limited training activities in Red-cockaded woodpecker cluster sites...[and] these training restrictions degraded realistic training" (Senate Hrg. 108-308, 2003).

During open discussion NRECM acknowledged training impacts associated with RCW conservation, but considered them both minor and largely caused by inflexibility among TASU. Andrew (I22) said, "it's very easy for the woodpeckers and soldiers to co-exist...[TASU] like to say that they can't, but there's really no evidence to show that they can't, until they start cutting down trees and putting in facilities. As long as they're still maneuvering, and not just cutting them down for ranges, then I think they can co-exist." William (I13) even suggested RCW conservation made training easier saying, "not every, you know, endangered species habitat is gonna be so beneficial to training. But it is most certainly the case here." Joseph (I10) acknowledged some challenges with access to training arenas, but suggested that they have nothing to do with RCW management and that instead, "it's just space. You know, we keep growing. So I don't think [NRECM] kind of holds us back here."

### 3.2. Forced accommodation

Although NRECM and TASU never engaged in direct contention over training and RCW conservation, they were forced to accommodate each other because of the ESA and the military mission. Endangered species policy gave some land use decision-making power to NRECM and this created a situation where TASU needed NRECM approval to create new training areas, and needed to comply with NRECM rules during training activities. During our discussions, NRECM often alluded to potential training restrictions associated with a failure to "produce" in the biodiversity conservation area (field notes). Richard (I21) said: "We are held to a higher standard. Federal lands, in general, are held to a higher standard, and the DoD lands in particular, because if we fail to continue to increase our capability to grow and recover endangered species and manage the lands that we have, then you can't train. And you lose exemptions; you lose critical habitat exemption that we get with our INRMPs. If you're not producing, then you're not going to be able to train soldiers they way you need to."

This situation created an environment where TASU believed they were dependent on NRECM to approve projects. Ryan (I14) said that he "can't sit down with [NRECM] and say, okay we have to sit down and make a compromise..."when, [NRECM tells] me there's something wrong with it, either the RCW's or the wetlands, all I can say is, what do you guys suggest we do?" Thomas (I23) talked about the frustrating process of building a new range and how he felt that compliance was impacting training. He described the process as taking, "two years to come to a consensus [on the placement of the range]. There's a lot of training that's not getting done as you work through that process...[once the plan is finalized, it] takes you five years to get to the money to fund it and then the sixth year you finally build it and the seventh year you finally give it to soldiers to train on. So that two years of messing around up there up front is not good for the soldier, 'cause he has to go to war tomorrow."

### 3.3. Reinforcing mechanisms

Although both groups avoided direct contention, evidence of conflict reinforcing mechanisms typically associated with protracted direct engagement in conflict was abundant. We found that both groups deindividualized each other and the resulting negative group identities led to a communication breakdown. Deindividualization refers to the process of beginning to view people primarily as members of a group instead of as individuals, and makes damaging forms of communication and negative social interactions more normatively acceptable (Northrup, 1989).

Instead of referring to NRECM as individuals, TASU referred to them as being a group of environmentalist civilians. Multiple TASU informants commented that "civilians" or anyone who had not served in the military didn't appreciate the work that they did when explaining perceptions of NRECM (field notes). Richard (I21) differentiated himself from NRECM, "remember, I'm an operator, not an environmentalist, okay? I would say that whether I'm sitting in this job, or whether I'm flying an airplane or whether I'm walking on the ground or driving a tank. I can't take myself out of and put myself in the community as a civilian, 'cause I'm not." An active duty soldier also said in reference to NRECM that "civilians don't get it, they never get it" and "civilians don't really understand our needs" (field notes). We found NRECM also de-individualized TASU, and often believed TASU did not care about the environment or realize the conservation value of military installations. Joseph (I10) thought that "environmental is a low priority right now for the operating forces. And it really shouldn't be. It's not hard." Daniel (I11) said, "yeah, what it boils down to is, if you're not interested in wildlife or the natural resources [you] view it as more of an obstruction."

Deindividualization facilitated development of negative group identities where each group expressed doubts as to the motives behind the behaviors of the other. Richard (I21) believed NRECM tried to avoid working with TASU even though the "mission is training...they [NRECM] don't have to be concerned about training. They focus on compliance, not on workarounds." Thomas (I23) talked about the process of collaborating on a project with NRECM; "Instead of them saying, 'it should go here', we had to say 'here, try this point'. 'Oh no, it can't go there'. 'Okay, we'll try this point'. Oh no, it can't go there'. 'Try this point'. Oh no, it can't go there'. 'Try this point'. Oh no, it can't go there'. Why don't you just help us with that instead of just being the guy saying no?"

We found these negative group identities resulted in both groups being skeptical of the motivations of the other. One

sub-theme associated with this mistrust was expressed by TASU who believed NRECM valued the wellbeing of the RCW over the lives of soldiers. Thomas (I23) believed that the focus of NRECM "is on that threatened and endangered species. Their focus is not on the soldier. [They] could care less if a soldier gets killed tomorrow 'cause that's not their focus." Thomas went on to say that NRECM "see themselves in more than a regulatory role, in my opinion...there's certainly a place for environmental compliance. Don't discount that one bit. But I don't think it's quite in harmony with saving a [soldier's] life. There's not one of those woodpeckers that's more important than a life that I can think of. Maybe in somebody's mind there is, but it ain't mine. Until you've had a son that's been killed, and never see him again, that's a different story."

Another sub-theme within mistrust was that NRECM behaviors were motivated more by the desire for power or jobs than saving endangered species. Jeffery (I19) thought, "the environmental community...the more control they have, the more identity they have, the more money they get. I mean, it's about jobs. I think that's the basis of it – it's about jobs." When asked why he thinks preserving RCW is so important, Joshua (I12) said "Quite frankly...if [the RCW is] delisted, they don't get any more money. They lose jobs. If they keep growing them past the recovery goal, they get more people, more money, more jobs." Thomas (I23) simply stated that fewer RCW would mean, "less money, less funding, less jobs" for NRECM.

Ultimately, negative group identities lead to a communication breakdown among TASU and NRECM where both groups preferred not to communicate, and chose instead to sabotage communication efforts. Timothy (I17) described a typical meeting with NRECM on RCW conservation. "I went over there and he [NRECM] asked me, 'What is it that you guys are not able to do right now?' And he pounded his hand on the table and he said, 'What are you not able to do right now?' and we can only say, 'There's nothing that we're not able to do right now, it's just that we're worried about what's going to happen five, ten, fifteen years down the line.'"

The communication breakdown was apparent during meetings between the groups. Cues to active listening such as verbal statements of validation, support, and reflection as well as non-verbal signals of eye contact or appropriate facial expressions were completely absent among TASU when NRECM spoke and vise versa. In one meeting Bill, a member of NRECM began to talk, and all of the TASU in the room immediately began to show that they were not interested in his opinion by reaching into their pockets and checking their cell phones, opening their calendars, or even standing up and leaving the room. When Bill attempted to directly engage Greg, a TASU member, in discussion, Greg promptly unwrapped a granola bar and began eating it so that he could not speak. This communication breakdown emerged without any direct engagement in conflict.

## 4. Discussion

Biodiversity conservation conflict in the military contexts that we observed was unusual in that symptoms typically associated with protracted direct conflict (Rubin et al., 2004) accrued and persisted without any direct engagement among parties. This finding may be explained by organizational boundary setting which outlines the "efficiency, power, competence and identity" (Santos and Eisenhardt, 2005) of an organization and influences and dominates the behavior of individuals within an organization (Hannan and Freeman, 1984). Organizational boundaries are often designed to discourage conflict in efforts to prevent its harmful symptoms including mistrust and communication failures (Rubin et al., 2004). In our study, military organizational boundaries prevented conflict, but not its harmful symptoms because parties could not address underlying disagreements over biodiversity conservation without first acknowledging they existed. TASU could not admit biodiversity conservation hurt training, because suggesting soldiers were sent into harm's way without adequate training was not allowable, and NRECM could not admit training hurt biodiversity conservation because working against the training mission was not allowable. Future social science research should address the extent this phenomenon occurs elsewhere, particularly around military installations in biodiversity hotspots. This research should include a qualitative component because strategic behavior among respondents and military organizational boundaries that prevent open disclosure of opinions will make responses to traditional surveys suspect. The NRECM and TASU officially denied any conflict over endangered species conservation, and likely would have done so on a questionnaire.

Our results suggest cultural differences between TASU and NRECM included different environmental value orientations (Vaske et al., 2001). TASU dialog reflected highly anthropocentric value orientations whereas NRECM dialog was more biocentric. The difference, however, was amplified in the minds of TASU who went so far as to state NRECM put conservation before soldiers' lives. Such extreme views highlight tension levels that have accumulated over time, rather than tension from a single conflict such as negotiating placement of an individual firing range within endangered species habitat. Conflict management research suggests that allowing parties to release tension through multiple, small controlled conflicts can prevent catastrophic and unpredictable conflicts from exploding later (Coser, 1956; Rubin et al., 2004; DeDreu and Gelfand, 2008). Accordingly some form of direct engagement, and perhaps escalation, may be needed, so that issues associated with biodiversity conservation can be acknowledged and internal instabilities can be addressed (Rubin et al., 2004).

Although creating a forum where dissent and conflict are allowed and even encouraged may appear to threaten wildlife conservation interests on military installations, there may be several benefits. Biodiversity was conserved on installations prior to any legislation protecting wildlife, but that may change if shifting political winds weaken the current position of NRECM (Wondolleck and Yaffee, 2000). Such a change may not be farfetched considering the lack of NEPA or ESA considerations in association with construction of the US-Mexico border wall (Nunez-Neto and Garcia, 2007), the 2009 issuance of permits to eliminate 3200 ha of RCW habitat on Fort Benning (James and Glitzenstein, 2011) and low levels of environmental oversight on activities associated with national security since the war on terror began in 2001. Wondolleck and Yaffee's (2000) admonition is particularly important in contexts of biodiversity conservation on military installations where the Endangered Species and Sikes acts have given NRECM unprecedented authority over decisions relative to other civilian groups.

In addition to preventing retaliation, encouraging dissent within the context of biodiversity conservation on military installations may improve decision-making. Mild escalation can allow groups to engage each other leading to better understanding of the issue, problem solving as well as revision and evaluation of policies and in fact has been shown to stimulate creativity, adaptability, and innovation (DeDreu and Gelfand, 2008). Consensus, particularly when achieved by suppressing conflict, tends to stifle adaptive decision-making (Ivie, 2002; Peterson et al., 2005). Pretending conflict does not exist may be particularly dangerous for NRECM given the rather extreme and erroneous perspectives held by TASU (e.g., NRECM do not care about soldiers losing their lives due to lack of training). Such dangerous views cannot be contested until they are acknowledged.

In order for NRECM and TASU to address biodiversity conservation conflict, they should develop pre-negotiation conditions by

agreeing to a shared definition of the problem and a shared commitment to resolution (Coser, 1956; Saunders, 1995). These conditions will not be easy to meet given cultural differences between the groups, but activities such as interactive problem-solving workshops may help (Kelman, 1986). Workshops could initially focus on problems where a shared definition of the problem can be found, and participants should be trained in basic communication skills including active listening and allowing every participant to have a chance to speak (Peterson, 2002). The improved communication alone could address barriers to conservation and training. Notably it could alleviate gridlock associated with persistence of the beliefs among NRECM that they were excluded from early stages of range siting and beliefs among TASU that NRECM did not want to participate in initial efforts to plan and site ranges. Once NRECM and TASU enhance trust and quality communication, they can begin addressing larger problems associated with ensuring the sustainability of training and biodiversity in the face of rapid suburban encroachment around installations.

Our findings suggest a need for careful evaluation of endangered species conservation successes in military contexts. First, future research should re-evaluate the concept of "military environmentalism" (Coates et al., 2011). Successful partnerships between the DoD and environmental organizations (e.g., the Gulf Coastal Plain Ecosystem Partnership, Sustainable Sandhills) have been publicized, but these partnerships are often coordinated with environmental management branches within the military (NRECM) and lack meaningful engagement from TASU. Such initiatives would benefit from financial and logistic support from TASU. Similarly, the well-known biodiversity conservation successes on military installations (Beaty et al., 2003) may not reflect smooth, consensus based, collaborative decisions as much as a powerful mixture between the threat of training restrictions which can be imposed if training places an endangered species in jeopardy [ESA section 7]), and huge budgets relative to other organizations engaged in biodiversity conservation.

Improved cooperation between TASU and NRECM is essential for successfully addressing current and future impacts of warfare on wildlife conservation. Novel biodiversity conservation initiatives intended to protect training (e.g., crediting systems where adjacent private landowners work with the military to conserve endangered species (Sorice et al., 2011)) require partnerships between TASU and NRECM. Further, most NRECM activities center around preventing ESA violations during the "preparation" stage of warfare (Senate Hrg. 107-737, 2001; Senate Hrg. 108-308, 2003). Major impacts on biodiversity occur during the other two stages (war and postwar activities) (Machlis and Hanson, 2011), and war is most prevalent in the world's most biodiverse regions (Hanson, 2011). The NRECM represent an army of conservation professionals that could be engaged in mitigating and reducing the impacts of war and postwar activities around the globe, and the first step towards that end would be increased trust and respect with TASU and other active duty military. A better understanding of biodiversity conflict on military installations is an essential element of efforts to ensure they remain global hotspots of both endemic and endangered species.

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