



Bookshelf

2019

Collateral Values: The Natural Capital Created by Landscapes of War.

Todd R. Lookingbill
University of Richmond, tlooking@richmond.edu

Peter D. Smallwood
University of Richmond, psmallwo@richmond.edu

Follow this and additional works at: <https://scholarship.richmond.edu/bookshelf>



Part of the [Biology Commons](#), [Physical and Environmental Geography Commons](#), and the [Remote Sensing Commons](#)

Recommended Citation

Lookingbill, Todd R., and Peter D. Smallwood, eds. *Collateral Values: The Natural Capital Created by Landscapes of War*. Landscape Series, volume 25. Cham, Switzerland: Springer Nature Switzerland, 2019.

NOTE: This PDF preview of *Collateral Values: The Natural Capital Created by Landscapes of War* includes only the preface and/or introduction. To purchase the full text, please click [here](#).

This Book is brought to you for free and open access by UR Scholarship Repository. It has been accepted for inclusion in Bookshelf by an authorized administrator of UR Scholarship Repository. For more information, please contact scholarshiprepository@richmond.edu.

Part I

Introduction

Chapter 1

Collateral Values: The Natural Capital Created by Landscapes of War



Todd R. Lookingbill and Peter D. Smallwood

Abstract Warfare and related military activities have intensive, long-term, negative impacts on the environment. But sites of past human conflict also present potential opportunities for conservation and restoration. We provide an approach to valuing military landscapes based on the ecosystem services that they provide. These services are often underappreciated because the benefits gained from the functioning of the ecosystems are not the primary reason for the protection of the sites. We describe these services as collateral values, drawing on the military concept of collateral damages. In this book, we provide examples from across the globe, reflecting conflicts stretching over hundreds of years. Landscapes considered include military battlefields, demilitarized borderlands, and potential peace parks. Specific conflicts include the American Revolutionary and Civil Wars, the Great European Wars, and recent engagements in Cuba, Afghanistan, and the Korean Peninsula. Examples are set within the conceptual framework of warfare ecology with a focus on post-war activities. They address conservation issues including land preservation, protection of biodiversity and water resources, and sustainable tourism. Where possible and appropriate, lessons learned from historical landscape trajectories are discussed in the context of their potential application to the future management of ecosystems still engaged in conflict. We suggest that the increased recognition of the multiple values of these unique landscapes should lead to their increased protection and careful management to preserve and promote the diverse services that they provide.

T. R. Lookingbill (✉)
Department of Geography and the Environment, University of Richmond,
Richmond, VA, USA
e-mail: tlooking@richmond.edu

P. D. Smallwood
Department of Biology, University of Richmond, Richmond, VA, USA

1.1 A Proposal

In 2016, the United States National Park Service (NPS) celebrated its 100-year anniversary. As part of its Call to Action for the centennial celebration, a new vision was articulated for a second century of national park management (NPS 2015). The grand idea of national parks has been evolving since the inception of the NPS to protect remote areas of pristine wilderness to, more recently, also incorporate lands representing Bill Cronon's sense of "wildness in our own backyards" (Cronon 1995). The centennial vision continues this evolution and includes a greater emphasis on promoting visitation in close proximity to diverse population centers that have not always been so thoughtfully served (Weber and Sultana 2013). Explicit within the Call to Action is the charge of "improving urban residents' awareness of and access to outdoor and cultural experiences close to home by promoting national parks in urban areas" (NPS 2015). Consistent with this evolving model of parks, the Science Committee of the NPS Advisory Board proposed a paradigm for the next century of NPS management that avoids the false dichotomy of labeling parks as either "natural" or "cultural" units and instead embraces all parks as coupled human-natural systems (NPS Advisory Board 2012).

At nearly the same time (from 2011–2015), the U.S. was also commemorating the 150-year anniversary of its Civil War. Benchmark anniversaries like this one have been shown to drive up visitation and attention to battlefield sites (e.g., van der Merwe 2014), and the number of people visiting U.S. battlefield parks nearly doubled in the 1960s as part of the centennial recognition (Madron and Tilton, Chap. 2). During the five-year period of the Civil War sesquicentennial, millions of private, local, state, and federal dollars were allocated to battlefield preservation efforts. The catalyzing effect of the war's anniversary led to a total preservation of more than 18,000 hectares of battlefield land by the non-profit Civil War Trust alone (American Battlefield Trust 2018). At the federal level, nearly \$35 million were allocated by the American Battlefield Protection Program to help state and local governments to preserve all or parts of 62 Civil War battlefield sites. Planning for additional preservation efforts extended to another 55 sites (NPS 2018).

The concurrence of these two anniversaries provided a prime conservation opportunity. The history and geographic distribution of U.S. Civil War battlefield sites lend themselves to the new NPS directives of the Call to Action. The U.S. Civil War Sites Advisory Commission has identified 384 sites of military significance (NPS 1993). Strategically, many of the sites are located in urban and suburban settings in close proximity to large population centers, as the historical campaigns were fought on the outskirts of cities, including the Capital of the Confederacy (Richmond, VA) and the Nation's Capital (Washington, DC). Ownership of these lands varies from completely private to a mix of different government and non-profit organizations, but more than 70 units of the NPS already preserve spaces associated with the Civil War. The NPS is busy working on new ways to interpret these landscapes that tell a richer story of the multifaceted aspects of the parks (NPS 2017; Rudy 2017). This initiative is consistent with the broader movement toward recognizing the value of multifunctional landscapes (Fischer et al. 2017), including sacred sites such as cemeteries

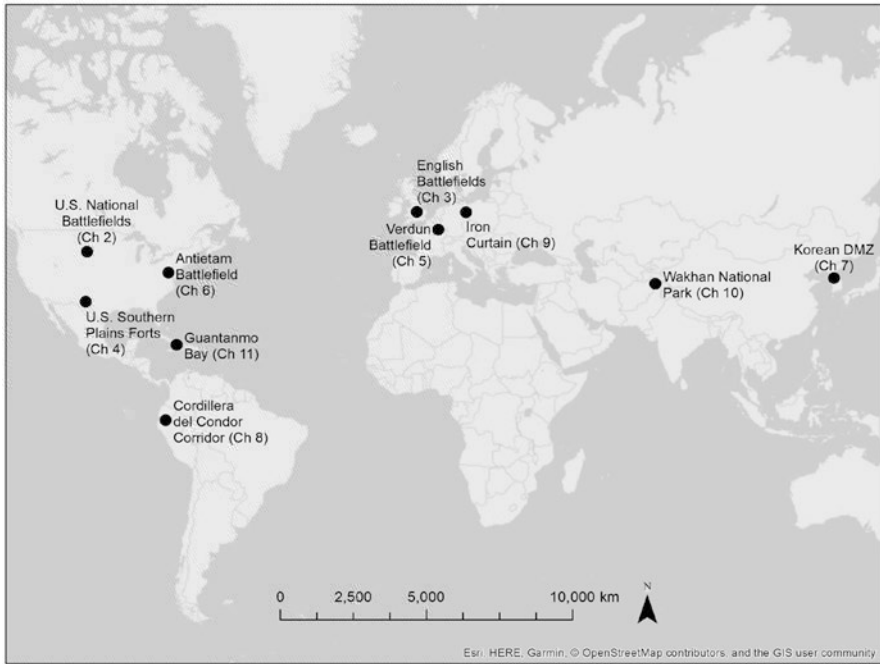


Fig. 1.1 Overview of case study sites presented in this book

(Kowarik et al. 2016), church forests (Reynolds et al. 2017), and battlefields (Pearson et al. 2010). The chapters in this book expound upon the benefits of battlefield conservation and landscape restoration through global examples representing military conflicts dating back more than a thousand years (Fig. 1.1).

Geography, as a discipline, has long been concerned with different aspects of military activity (Sheppard and Tyner 2016). The book provides an approach to valuing military landscapes based on the ecosystem services that they provide. Ecosystem services have been defined in numerous ways, but a common definition is that they are the outputs of natural systems from which humans may derive benefits (National Research Council 2005; Boyd and Banzhaf 2007). By this definition, ecosystem services require use or appreciation by people, but can incorporate any concerns people may have, including values for preserving the integrity of natural systems. Services may include recreational opportunities, carbon sequestration, aesthetic enjoyment, and improved quality of natural resources like water (de Groot et al. 2002; Fisher et al. 2009).

The central premise of this book is that sites of past warfare and related military activity represent potential opportunities for future ecosystem services and warrant environmental conservation. For the most part, these sites are initially recognized for their cultural and historical value. The immediate spiritual benefits provided by these sites to former combatants and their families are quickly followed by recreational and economic benefits as visitation to these sites increases (Miles 2014). In this sense, battlefield tourism comprises a significant sub-discipline of war tourism

(which itself can be considered a branch of dark tourism or thanotourism, i.e., tourism associated with death or suffering; Fonseca et al. 2016). Documented war tourism dates back at least as far as the Battle of Waterloo and the Boer Wars (Seaton 1999; Moeller 2005). The economic benefits of dark tourism are substantial and increasing worldwide (Zhang 2010; Madden and Shipley 2012). Culloden Battlefield, for example, has become the most visited tourist destination in northern Scotland (Gold and Gold 2003; McLean et al. 2007).

Once memorialized as protected landscapes, battlefield parks can provide additional ecosystem services that extend beyond their original mission. These services are what we describe as “collateral values,” drawing on the military concept of collateral damage (the term collateral values was first suggested to us by Gary Machlis in a conversation we had with him about the book: we are grateful to him for his imagination in giving the book such an evocative title). Collateral values are the focus of this book. They include promoting the future existence of rare species, safe recreational opportunities, and aesthetic enjoyment. As a consequence of the historical setting of military conflicts on the fringe of cities of strategic importance, many of these parks have become oases of natural amenities within the encroaching urban and suburban matrix (Lookingbill et al. 2014).

The book is set within the existing conceptual framework of warfare ecology in which three distinct phases of ecological impacts of war are defined: preparations for war, war itself, and post-war activities (Machlis and Hanson 2008). The growing literature within this field begins with an acknowledgement that the impacts of warfare are overwhelmingly negative, to society and also to the environment (Dudley et al. 2002; Lawrence et al. 2015; Gaynor et al. 2016; Daskin and Pringle 2018). The ultimate objective should be the elimination of these destructive behaviors. Direct and indirect environmental impacts include pollution and contamination, habitat destruction, poaching and resource extraction, cratering, fires, noise, and suspension or lack of enforcement of existing environmental regulations and laws (Hanson 2018). While these impacts occur at all three stages of warfare, the case studies in this book focus on the post-war period. This period can be characterized by all of the same pressures and adverse effects of a disrupted society and environment.

However, there are also certain opportunities created by warfare. For example, active military training areas may create heterogeneous disturbance regimes that enhance biodiversity by creating habitat in varied successional stages (Warren et al. 2007; Zentelis and Lindenmayer 2014). Post-war, decisions need to be made about how to manage lands that may have been abandoned during conflict or that remain unsafe or that are considered hallowed. The days and years immediately following the cessation of military activities are a critical period for landscape planning, management, and potentially conservation (Negret et al. 2017). Proactive environmental stewardship can be a fulcrum of the peace process. Central to the stories conveyed in this book, positive environmental outcomes can be accomplished relatively inexpensively as “collateral values” when combined with other social, cultural, and political goals. Within this context, the dedication of the resources required to study, plan, and create ecological conservation areas is minor compared to the overall expenses associated with military warfare. The stories provided in this book provide powerful arguments for the creation of post-war conservation areas.

1.2 Battlefields

The book is divided into two halves, with the first half focused on landscapes recognized primarily for their historical value as sites of significant military battles (Fig. 1.2). These case studies represent over a millennium of warfare including England's long military history, frontier battles associated with early European colonization of the American Southern Plains, the American Revolutionary and Civil Wars, and the First World War. The second half of the book focuses on more recent engagements in borderlands of Europe, Afghanistan, Cuba, South America, and the Korean Peninsula. Examples of the collateral values created by landscapes of war are thus drawn from around the world, and each chapter begins with a full-page map of the focal study site.

Dating back to the designation of Yellowstone as the world's first national park in 1872, the U.S. NPS has been a thought leader in protected lands management. In Chap. 2, Madron and Tilton describe the evolution of the agency's conservation strategy as it has progressed to being more inclusive of battlefield landscapes. The chapter provides a history of how battlefield parks were first added to the U.S. NPS portfolio of protected lands over a century ago, and how they have become, through



Fig. 1.2 High Bridge State Park, Virginia. Virginia contains the largest number of Civil War battlefields in the United States. Landscapes commemorating historical battlefields, like this one memorializing the conflict from over 150 years ago, provide a mix of ecosystem types (grasslands, forests, and the Appomattox River crossed by the High Bridge itself) and services (hiking, bicycling, horseback riding, water regulation, wildlife habitat, and education)

time, some of the most visited sites in the national park system. Through textual analysis of the enabling legislation of national parks, this chapter provides evidence of how the rationale for creating battlefield parks has changed over the past 100 years. A major emphasis of the book is on the temporal changes in attitudes about battlefield conservation. A related emphasis is on the post-war changes in the physical landscapes themselves. Chapter 3 provides a proposed trajectory for post-war landscapes leading to their management for multiple, layered assets through principles of constructive conservation.

Chapters 3, 4, and 5 offer examples of the ecosystem services provided by battlefield parks in a chronology from sites preserved to commemorate the Battle of Maldon in 991 to the Battle of Verdun in 1916. In addition to the overall theoretical conservation framework laid out by Sibilila and her co-authors, Carter and Lookingbill, Chap. 3 provides a formal definition of a “battlefield” and outlines a brief history of English domestic warfare, which has created over 500 known battlefield sites. Forty-six of these sites have been formally recognized on the Register of Historic Battlefields. In their chapter, the authors describe the ecosystem services provided by three English battlefield landscapes that vary along a management and land-use gradient. The chapter concludes with an analysis of the patterns of land-cover change in and around the case study sites.

In Chap. 4, Julian picks up with a description of the battles fought between European settlers and various Tribal Nations in the U.S. Southern Plains states of Oklahoma and Texas between 1821 and 1890. Of the many forts that were built during these conflicts, 33 have been designed as publicly accessible, conserved spaces. This chapter provides a detailed inventory of the ecosystem services that have evolved at these old fort sites. The study provides an example of a broad category of militarized landscapes where forts act as the first inroads of an invading people into a new land. One could argue that the Southern Plains forts were a continuation of a process that had been going on for more than a century to encourage European settlement into the New World, and similar networks of protected lands commemorating fort installations can be found elsewhere in the Eastern U.S. For example, many of the 42 forts created as part of the Third System of coastal fortification in the 1800s are also publicly accessible today (Weaver 2001).

Jumping forward more than a century, Machado and Hupy (Chap. 5) describe the evolution of the forested landscape of Verdun from its pre-war condition in the early twentieth century, through the First World War, and into the present day, in which it attracts nearly 250,000 visitors per year. The chapter details the many functions provided by the present-day landscape and provides an example of how the natural resources of battlefield sites that may be difficult or dangerous to access can be mapped and assessed using remotely sensed imagery. It concludes with a listing of some of the contemporary conservation challenges confronting the site.

As time passes, many of these landscapes share common threats to the ecosystem services that they provide. These threats include habitat loss and isolation, invasive species, and regional stressors over which local management has limited control. Challenges to managing these landscapes include incomplete ownership of core habitat areas, busy roads dissecting park interior areas, air quality problems, climate

change, and mixed mandates to preserve cultural and natural resources that are sometimes at odds. For example, of the 385 battlefields identified by the U.S. Civil War Sites Advisory Commission, over 70 sites were considered completely lost to residential and commercial construction, and an additional 161 were experiencing moderate to high levels of threat (NPS 1993). Chapter 6 describes in more detail the types of threats encountered by battlefield parks as their surrounding landscapes evolve. Lookingbill, Minor, and Wainger then quantify the impact of one of these stressors, exotic plant invasions, to the ecosystem services provided at Antietam National Battlefield, the site of one of the bloodiest and most significant battles of the U.S. Civil War. The first half of the book ends with this consideration of the long-term management of battlefield parks.

Although the most familiar form of collateral values may be represented within battlefield parks, exemplified by Gettysburg National Military Park (e.g., Williams and Patterson 1999) or Antietam National Battlefield (e.g., Landsman and Bowman 2017), the landscapes considered here are not restricted solely to traditional battlefields. The attention is on any areas associated with historical, military conflict. Existing battlefield parks provide perhaps the longest-standing examples of the evolution of landscapes of war towards generators of multiple ecosystem benefits. By comparison, borderlands between countries provide perhaps the greatest potential for future ecological restoration as collateral value landscapes.

1.3 Borderlands

Borderlands as referenced in this book may, in some circumstances, be peace parks but only where these parks have been associated with prior armed conflicts. We do not include the over 100 transboundary conservation areas (TCAs), like the Waterton-Glacier International Peace Park on the border of the U.S. and Canada or the Great Limpopo Transfrontier between South Africa, Mozambique, and Zimbabwe, that were established primarily for biodiversity conservation. The value of connecting conservation efforts across international borders has gained attention recently, for example, along the U.S.-Mexico border (Fowler et al. 2018); however, while TCAs have potential for providing valuable ecosystem services, their creation is fraught with close ties to concepts such as economic neoliberalism and can come at the expense of human populations living in the region (King and Wilcox 2008). The ecosystem values described in this book are secondary to the primary values associated with establishing or maintaining military peace and security.

Moving from battlefield parks that, in some cases, have not seen warfare for hundreds of years, the second half of the book examines landscape of more recent conflict (Fig. 1.3). While the first half of the book has a backward-looking focus, paying close attention to the histories of the sites and how those histories inform their current character and values, the second half of the book is more prospective, considering the future collateral values that could be attained by establishing parks at conflict sites along international borders. In many cases, these conflict zones are



Fig. 1.3 The Wakhan corridor, Afghanistan. The Wakhan corridor became part of Afghanistan in the late nineteenth century as a buffer zone between the Russian empire and the British Raj in India. Already remote, it was further isolated through the twentieth century by cold war hostilities and the civil war that erupted after the Soviet Union withdrew its troops in 1989. In 2014, it was designated as Afghanistan's second national park

already providing ecosystem services. With more fences and walls being constructed along borders around the world, especially following the September 11, 2001 attacks in New York and Washington, D.C. (Vallet 2014), it is worth stepping back and considering the habitats and ecosystem services that are impacted by these barriers and the opportunity costs of not protecting them (see for example Lasky et al. 2007; Ogden 2017).

Perhaps the most dramatic and dangerous border in the world is the Demilitarized Zone (DMZ) between North and South Korea. The Korean War was a bitter, lethal conflict. In three years, hundreds of thousands of military personnel were killed, and estimates of civilian deaths range over two million (DeBruyne 2018). The DMZ was established in the summer of 1953 as a mechanism to stop the fighting, albeit there has never been a treaty to formally end the war. The leaders of the countries could not have anticipated that the DMZ would still be in place more than six decades later, or that it could end up playing such an important role in preserving Korean biodiversity, as well as important historical and cultural sites. Brady outlines the ecosystem services now provided by the DMZ, as well as the important cultural functions. In Chap. 7, she describes the risks of losing the benefits that have developed from the DMZ, and a vision for conserving them. Developing the DMZ into a

transboundary protected area would be especially challenging given the tremendous disparity in standards of living between North and South Korea. Nevertheless, Brady finds reason to hope that the DMZ's beneficial functions can be conserved.

In Chap. 8, Ali describes a case where potential collateral values from a demilitarized border were not only planned for, but leveraged for peacebuilding. Peru and Ecuador had fought repeatedly over a disputed border. Tensions rose again in 1998, and both sides feared a resumption of military conflict. The presidents of Peru and Ecuador met with the American President Clinton, asking him to lead the process to develop a proposal to settle the dispute. A key factor in the proposal was an agreement that both sides would establish ecological parks on their sides of the disputed border. A treaty was eventually signed, the peace has held, and Cordillera del Condor was widely lauded as an example of environmental peace-making. Unfortunately, the two sides have not protected the natural resources of the Cordillera del Condor. As Ali demonstrates, this park has succeeded in keeping the peace, but not in conserving the area's natural capital.

Stretching over 12,500 km, the Iron Curtain between the Warsaw Pact nations allied with the USSR and the North Atlantic Treaty Organization (NATO) nations allied with the U.S. may have been the longest border between conflicting parties. Havlick (Chap. 9) describes the European Green Belt initiative to create a system of protected areas, parks, trails, and bike paths along the entire length of the old Iron Curtain. Along with a personal narrative drawn from his experiences crossing the border during the Cold War, and later biking 1200 km of the developing Green Belt, Havlick explores the tensions inherent in ecological conservation on militarized landscapes. While we should not forget the brutality of the conflicts that gave rise to these landscapes, Havlick also explores the fears that working to develop their collateral values may also legitimize the original militarization of these landscapes.

In 2014, Afghanistan declared the whole of the Wakhan Corridor as its second national park. Although its status as a national park is very recent, it became defined as a region and attached to Afghanistan long ago in the latter half of the nineteenth century. The Russian Empire and British Raj in India were the superpowers of the Victorian age, competing for territory and power in Asia. They were at risk of colliding in a poorly mapped region between Afghanistan and China. Smallwood and Shank recount the story of how Afghanistan's borders were drawn in the Great Game by those superpowers, and how the Wakhan came into being as a demilitarized buffer zone between them. Chapter 10 describes what is currently known of the natural capital of the park (primarily biodiversity, including some rare, charismatic species, such as snow leopards), and the challenges that lie ahead of efforts to sustainably manage that capital.

Roman offers a proposal to create a peace park on another disputed border region, the US naval base on Guantanamo Bay, Cuba. While the US maintains that treaties give it the right to maintain the naval base in perpetuity, it is no longer necessary as a navy base, and instead serves as an impediment to improved relations with a rapidly changing Cuba. In Chap. 11, Roman proposes to turn the base into a peace park, dedicated to the conservation and study of biodiversity. While initial reactions to such a proposal have been mixed, Roman makes a compelling case for

the many benefits that would be provided by an internationally operated park, research center, and scientific training facility at Guantanamo.

The evolution of warfare suggests that current and future wars are unlikely to be restricted to well-defined battlefields that can later be set aside as protected landscapes. However, while the future of warfare is changing, it is an unfortunate reality that there will always be conflict zones. Chapter 12 concludes the book by looking to the future of warfare and border disputes. Smallwood and Lookingbill argue that tensions along borderlands will continue to create new landscapes that can acquire collateral values. The book concludes with a description of how a remarkable group of diverse stakeholders has forged new natural capital from national tragedy, by creating a 2200-hectare National Memorial at the site where UAL Flight 93 crashed into Pennsylvania coal country on 9/11. In this example and throughout the book, the authors express the hope that a recognition of the multiple values of these unique landscapes of war will lead to their increased protection and their careful management to preserve and promote the diverse services that they provide.

References

- American Battlefield Trust. (2018). <https://www.battlefields.org/>. Accessed 12 Feb 2018.
- Boyd, J., & Banzhaf, S. (2007). What are ecosystem services? *Ecological Economics*, 63, 616–626.
- Cronon, W. (1995). The trouble with wilderness; or, getting back to the wrong nature. In W. Cronon (Ed.), *Uncommon ground: Rethinking the human place in nature* (pp. 69–90). New York: W. W. Norton & Co.
- Daskin, J. H., & Pringle, R. M. (2018). Warfare and wildlife declines in Africa's protected areas. *Nature*, 553, 328–332.
- de Groot, R. S., Wilson, M. A., & Boumans, R. M. J. (2002). A typology for the classification, description, and evaluation of ecosystem functions, goods, and services. *Ecological Economics*, 41, 393–408.
- DeBruyne, N. (2018). *American war and military operations casualties: Lists and statistics*. Congressional Research Service, RL32492. Accessed 14 Nov 2018.
- Dudley, J. P., Ginsberg, J. R., Plumptre, A. J., Hart, J. A., & Campos, L. C. (2002). Effects of war and civil strife on wildlife and wildlife habitats. *Conservation Biology*, 16, 319–329.
- Fischer, J., Meacham, M., & Queiroza, C. (2017). Plea for multifunctional landscapes. *Frontiers in Ecology and the Environment*, 15, 59–59.
- Fisher, B., Turner, R. K., & Morling, P. (2009). Defining and classifying ecosystem services for decision making. *Ecological Economics*, 68, 643–653.
- Fonseca, A. P., Seabra, C., & Silva, C. (2016). Dark tourism: Concepts, typologies and sites. *Journal of Research Tourism & Hospitality*, S2–S002.
- Fowler, N., Keitt, T., Schmidt, O., Terry, M., & Trout, K. (2018). Border wall: Bad for biodiversity. *Frontiers in Ecology and the Environment*, 16, 137–138.
- Gaynor, K. M., Fiorella, K. J., Gegory, G. H., Kurz, D. J., Seto, K. L., Withey, L. S., & Brashares, J. S. (2016). War and wildlife: Linking armed conflict to conservation. *Frontiers in Ecology and the Environment*, 14, 533–542.
- Gold, J. R., & Gold, M. M. (2003). Representing Culloden: Social memory, battlefield heritage and landscape of regrets. In S. P. Hanna & V. J. Del Casino Jr. (Eds.), *Mapping tourism*. Minneapolis: University of Minnesota.
- Hanson, T. (2018). Biodiversity conservation and armed conflict: A warfare ecology perspective. *Annals of the New York Academy of Sciences*, 1429, 50–65.

- King, B., & Wilcox, S. (2008). Peace Parks and jaguar trails: Transboundary conservation in a globalizing world. *GeoJournal*, *71*, 221–231.
- Kowarik, I., Buchholz, S., von der Lippe, M., & Seitz, B. (2016). Biodiversity functions of urban cemeteries: Evidence from one of the largest Jewish cemeteries in Europe. *Urban Forestry & Urban Greening*, *19*, 68–78.
- Landsman, A. P., & Bowman, J. L. (2017). Discordant response of spider communities to forests disturbed by deer herbivory and changes in prey availability. *Ecosphere*, *8*, e01703.
- Lasky, J. R., Jetz, W., & Keitt, T. H. (2007). Conservation biogeography of the US–Mexico border: A transcontinental risk assessment of barriers to animal dispersal. *Diversity and Distributions*, *17*, 673–687.
- Lawrence, M. J., Stemberger, H. L. J., Zolderdo, A. J., Struthers, D. P., & Cooke, S. J. (2015). The effects of modern war and military activities on biodiversity and the environment. *Environmental Reviews*, *23*(4), 443–460.
- Lookingbill, T., Schmit, J., Tessel, S., Suarez-Rubio, M., & Hilderbrand, R. (2014). Assessing national park resource condition along an urban-rural gradient in and around Washington, D.C., USA. *Ecological Indicators*, *42*, 147–159.
- Machlis, G. E., & Hanson, T. (2008). Warfare ecology. *Bioscience*, *58*, 729–736.
- Madden, M., & Shipley, R. (2012). An analysis of the literature at the nexus of heritage, tourism, and local economic development. *Journal of Heritage Tourism*, *7*, 103–112.
- McLean, F., Garden, M.-C., & Urquhart, G. (2007). Romanticizing tragedy: Culloden site in Scotland. In C. Ryan (Ed.), *Battlefield tourism: History, place and interpretation* (Advances in tourism research) (pp. 222–234). New York: Elsevier.
- Miles, S. (2014). Battlefield sites as dark tourism attractions: An analysis of experience. *Journal of Heritage Tourism*, *9*, 137–147.
- Moeller, M. (2005). *Battlefield tourism in South Africa with special reference to Isandlwana and Rorke's drift KwaZulu-Natal*. Dissertation, University of Pretoria.
- National Park Service. (1993). *Report on the Nation's civil war battlefields*. Washington, DC: Civil War Sites Advisory Commission c/o National Park Service. <https://www.nps.gov/abpp/cwsac/cws0-1.html>. Accessed 16 April 2015.
- National Park Service. (2015). *A call to action: Preparing for a second century of stewardship and engagement*. https://www.nps.gov/calltoaction/PDF/C2A_2015.pdf. Accessed 11 Jan 2018.
- National Park Service. (2017). *NPS civil war to civil rights commemoration summary report*. <https://www.nps.gov/civilwar/upload/civil-war-to-civil-rights-summary-report-1-v2.pdf>. Accessed 14 Dec 2017.
- National Park Service. (2018). *American battlefield protection program*. <https://www.nps.gov/abpp/index.htm>. Accessed 12 Feb 2018.
- National Park System Advisory Board Science Committee. (2012). *Revisiting Leopold: Resource stewardship in the national parks*. https://mylearning.nps.gov/wp-content/uploads/2016/08/Revisiting-Leopold_Resource-Stewardship-in-the-National-Parks-2012.pdf. Accessed 5 Nov 2017.
- National Research Council. (2005). *Valuing ecosystem services: Toward better environmental decision-making*. Washington, DC: The National Academies Press.
- Negret, P. J., Allan, J., Brackowski, A., Marone, M., & Watson, J. E. M. (2017). Need for conservation planning in postconflict Colombia. *Conservation Biology*, *31*, 499–500.
- Ogden, L. E. (2017). Border walls and biodiversity: New barriers, new horizons. *Bioscience*, *67*, 498–505.
- Pearson, C., Coats, P., & Cole, T. (Eds.). (2010). *Militarized landscapes: From Gettysburg to Salisbury Plain*. New York: Continuum.
- Reynolds, T., Collins, C., Eshete, A. W., Liang, J., Briggs, W., Sisay, T., Lowman, M., & Adamu, E. (2017). Sacred natural sites as mensurative fragmentation experiments in long-inhabited multifunctional landscapes. *Ecography*, *40*, 144–157.

- Rudy, J. (2017). From tokenism to true partnership: The National Park Service's shifting interpretation at the Civil War's sesquicentennial. In K. M. Levin (Ed.), *Interpreting the Civil War at museums and historic sites* (pp. 61–76). Lanham: Rowman & Littlefield Publishers.
- Seaton, A. V. (1999). War and thanatourism: Waterloo 1815–1914. *Annals of Tourism Research*, 26, 130–158.
- Sheppard, E., & Tyner, J. (2016). Forum on geography and militarism: An introduction. *Annals of the American Association of Geographers*, 106, 503–505.
- Vallet, E. (Ed.). (2014). *Borders, fences and walls: State of insecurity?* (Border Regions Series). Burlington: Ashgate Publishing.
- van der Merwe, C. (2014). Battlefields tourism: The status of heritage tourism in Dundee, South Africa. *Bulletin of Geography*, 26, 121–129.
- Warren, S. D., Holbrook, S. W., Dale, D. A., Whelan, N. L., Elyn, M., Grimm, W., & Jentsch, A. (2007). Biodiversity and the heterogeneous disturbance regime on military training lands. *Restoration Ecology*, 15, 606–612.
- Weaver, J. R., II. (2001). *A legacy in brick and stone: American coastal defense forts of the Third System, 1816–1867*. McLean: Redoubt Press.
- Weber, J., & Sultana, S. (2013). Why do so few minority people visit national parks? Visitation and the accessibility of “America’s Best Idea”. *Annals of the Association of American Geographers*, 103, 437–464.
- Williams, D. R., & Patterson, M. E. (1999). Environmental psychology: Mapping landscape meanings for ecosystem management. In H. K. Cordell & J. C. Bergstrom (Eds.), *Integrating social sciences and ecosystem management: Human dimensions in assessment, policy and management* (pp. 141–160). Champaign: Sagamore Press.
- Zentelis, R., & Lindenmayer, D. (2014). Bombing for biodiversity—Enhancing conservation values of military training areas. *Conservation Letters*, 8, 299–305.
- Zhang, J. J. (2010). Of Kaoliang, bullets and knives: Local entrepreneurs and the battlefield tourism enterprise in Kinmen (Quemoy), Taiwan. *Tourism Geographies*, 12, 395–411.