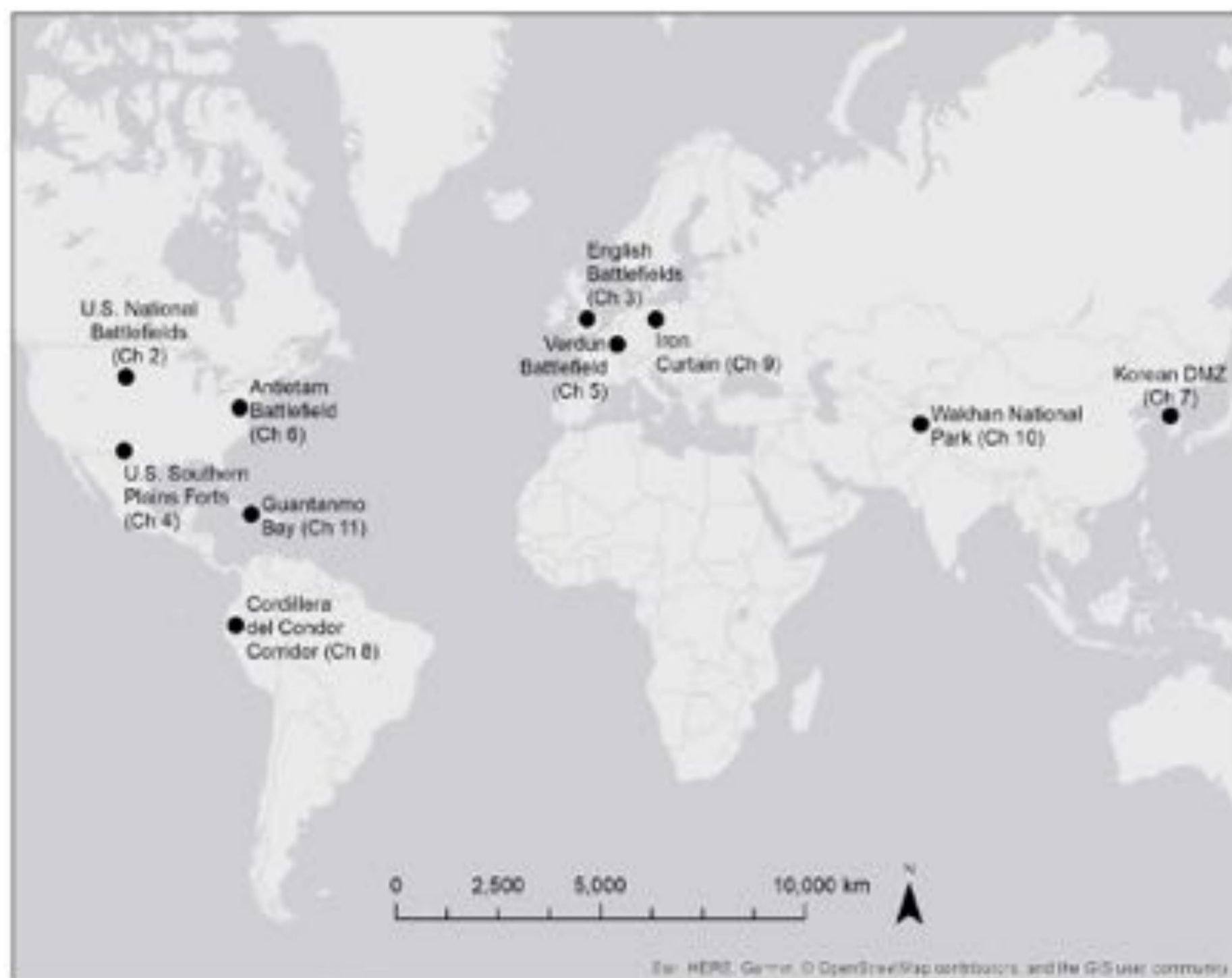


Introduction – Collateral Values

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. 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.

Case Studies



Example landscapes 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.

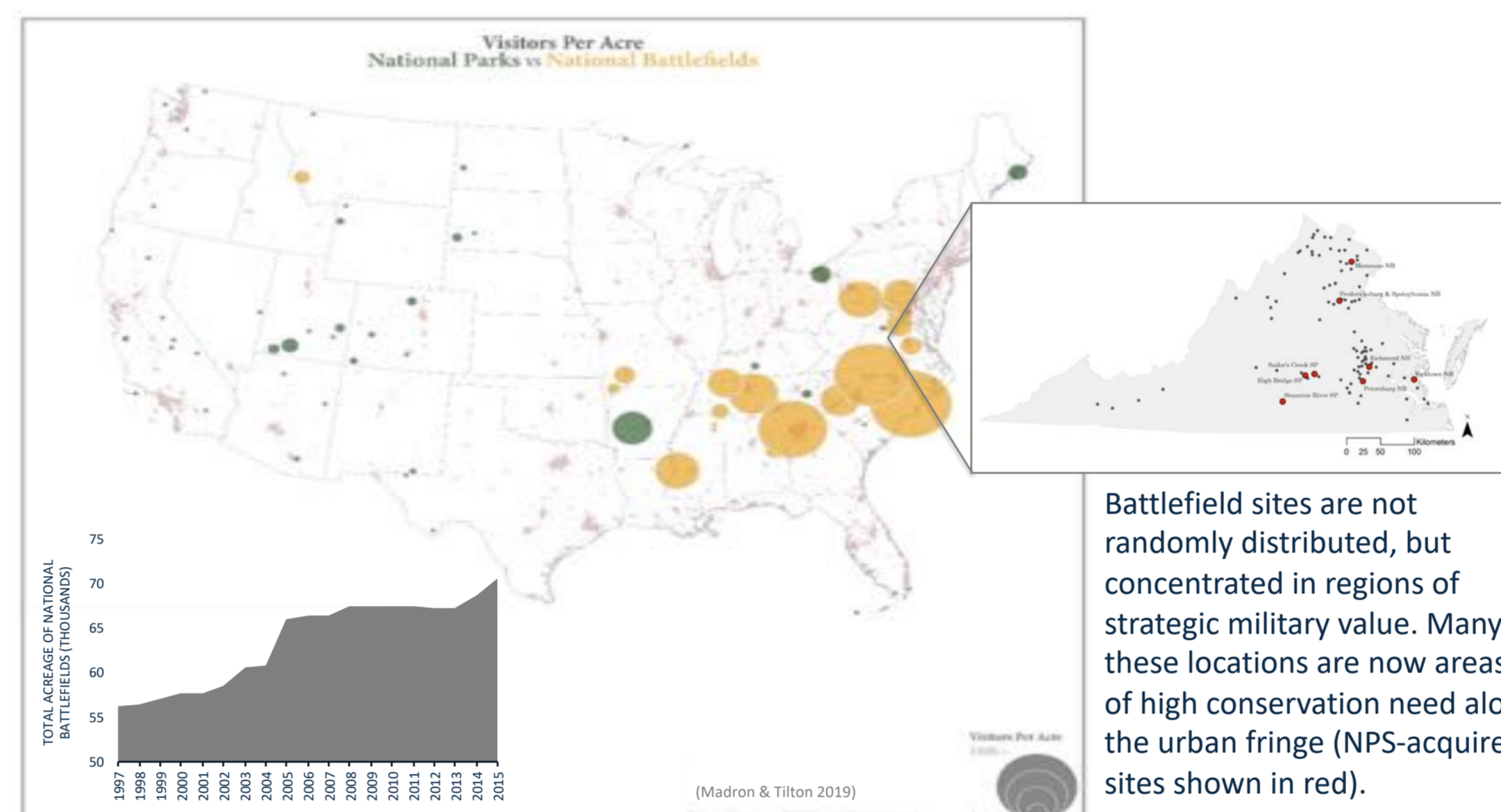
- Case studies describe successes and failures, opportunities and risks, and creative proposals for new protected landscapes;
- advance the emerging disciplines of warfare ecology and battlefield tourism;
- combine perspectives from landscape ecology, conservation biology, environmental history, and geography; and
- apply state-of-the-art approaches of landscape ecology, including methods for change detection, connectivity analysis, and the quantification of ecosystem services.

Battlefields

The book is divided into two parts, with the first half focused on landscapes recognized primarily for their historical value as sites of significant military battles. 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. 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.



Warfare ecology describes three distinct phases of ecological impacts of war: preparations for war, war itself, and postwar activities. The case studies of the book are focused on actions following the period of conflict.



In 2015, the U.S. was commemorating the 150-year anniversary of its Civil War. The following year, the U.S. National Park Service (NPS) celebrated its 100-year anniversary. The concurrence of these two anniversaries provided a prime conservation opportunity and a motivation for this book.

Example ecosystem services provided by battlefield parks (by user groups)

Casual visitors

Aesthetics of visitor experience
Convenient road/water access
Walking, hiking, biking opportunities
Safety of outdoor recreation

Avid recreationalists

Birdwatching
Native plant/wildflower viewing
Insect watching (e.g., butterflies)
Amphibian/reptile watching
Nature photography
Historic/cultural tourism

Neighbors

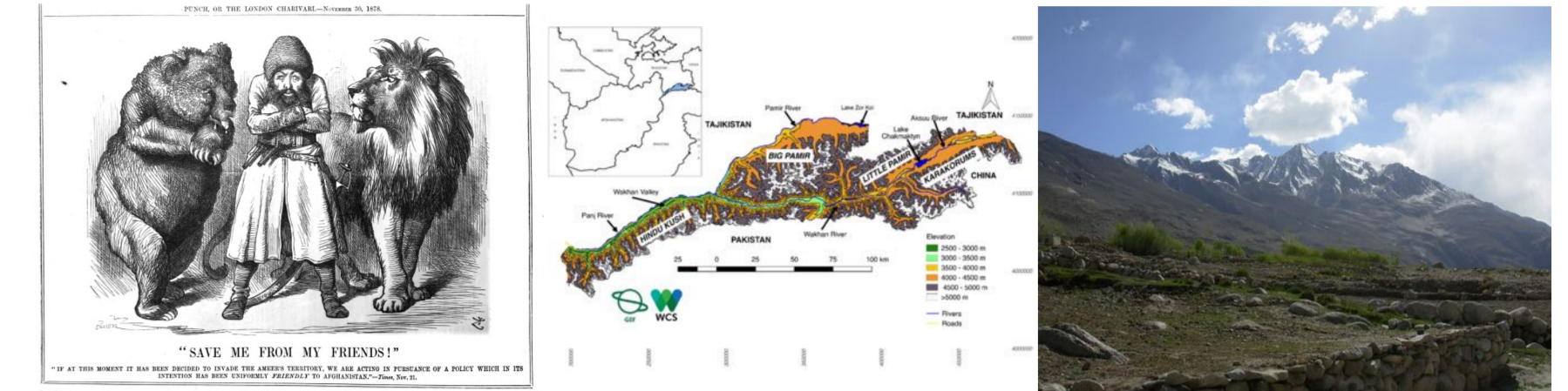
Safety and convenience of travel
Aesthetics from roads and viewpoints
Property values
Buffer incompatible uses
Maintenance costs (e.g., energy use, yard maintenance)

Non-use Beneficiaries

Climate regulation
Native ecosystem preservation
Charismatic species preservation
Maintenance of significant natural areas

Borderlands

The second half of the book examines sites of more recent conflict. The evolution of warfare suggests that future wars are unlikely to be restricted to well-defined battlefields that can later be set aside as protected landscapes. However, opportunities to acquire collateral values will continue, for example, at conflict zones along international borders.



The Wakhan corridor became part of Afghanistan in the late 19th century as a buffer zone between the Russian empire and the British Raj in India. Already remote, it was further isolated through the 20th 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 2nd national park.

These case studies are more prospective and include a new proposal for transforming the Guantánamo Bay detention facility (Gitmo) into a peace park and ecological research center; the creation of Wakhan National Park; and conservation lessons learned at the Cordillera del Condor Corridor of the Andes mountains, the Iron Curtain, and the Korean Demilitarized Zone (DMZ). Additional border disputes that cut through landscapes that provide valuable ecosystem services include between Sudan and South Sudan; Cambodia and Thailand; Angola and the Democratic Republic of Congo; Pakistan and India; Iran and Iraq; and China, Russia, Vietnam, and India.



The Korean DMZ and the European Green Belt, tracing the path of the Cold War's Iron Curtain, are visible, tangible boundaries that have become popular tourist attractions for their natural amenities.



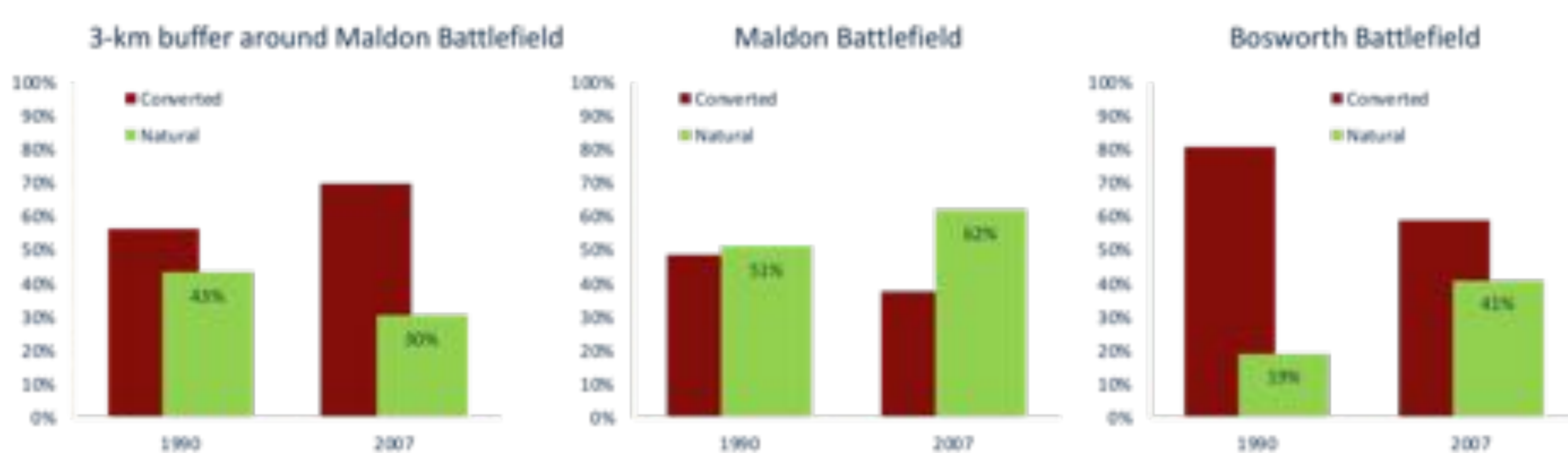
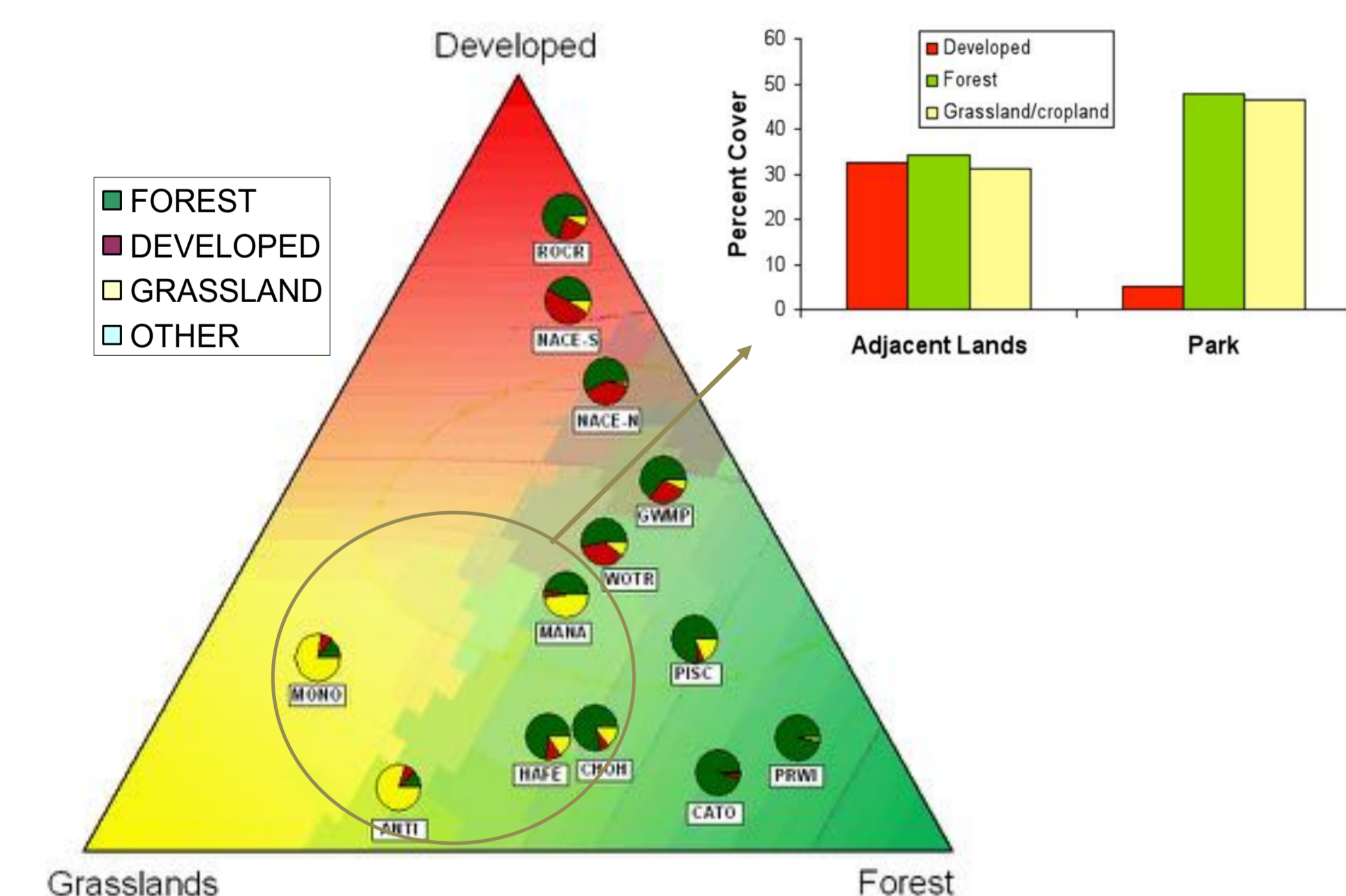
The Northeast Gate of Gitmo could provide the first opening between Cuba and the U.S. Naval Base: a rendering of the border with an installation of free-standing panels depicting images of species native to the region (artwork courtesy Dave Hampton; Roman 2019).

Conclusions

Recent studies indicate that we are in danger of losing at least one third of the world's protected areas to development and other threats. We describe how additional natural capital could be protected as “collateral values” by protecting sites whose origins lie in the tragedies of war. In the book, we identify dozens of ecosystem services in dozens of landscapes that could be provided using this approach. However, we also offer examples where the approach has not been successful. And we caution against the dangers of legitimizing militarization or greenwashing historical atrocities. Regardless of any potential conservation opportunities, we should never forget the brutality of the conflicts that gave rise to these landscapes.

Acknowledgments

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The benefits of protection as demonstrated for battlefield parks around Washington, D.C. (top) and for English battlefields (below). Predominant 2006 land cover within each park (pie diagrams) embedded within the land cover of the surrounding 3-km buffer region (larger triangle); battlefield parks are circled in the triangle. Bar graphs provide the percent cover of natural and converted land covers in the battlefields and for unprotected lands immediately surrounding the battlefields. Data from the Centre for Ecology and Hydrology Land Cover Map (Morton et al. 2011) and National Land Cover Dataset (Homer et al. 2007).