

Chapter 7

Valuing the Wounds of War: Korea's DMZ as Nature Preserve



Lisa M. Brady

Abstract Korea's Demilitarized Zone (DMZ) contains a wealth of what this volume calls "collateral values" ranging from undisturbed habitat and de facto protection for the peninsula's rare and endangered species to conservation of a variety of cultural sites, both ancient and more modern, that have deep meaning for Korea's people. This chapter examines the environmental history of the DMZ, illustrating how changes in both nature and culture since 1953 have helped to transform a relic of war into a symbol of peace. Although never intended to be permanent, the DMZ has radically altered the landscape of the Korean peninsula in ways that many inside both North Korea and South Korea, as well as across the globe, wish to make lasting. Because of its scientific, environmental, and cultural importance, the DMZ has become the object of preservation efforts even as reunification remains an important goal. This chapter argues that, in both its material and symbolic forms, the DMZ may reify the discontinuities between north and south but, in very important ways, it also serves as a green ribbon of hope, a place that commemorates the human sacrifices of military conflict and protects a variety of ecosystems and species that are found nowhere else on the peninsula.

7.1 Introduction

Clearly distinguishable in satellite images, a ribbon of green bisects the Korean peninsula at its narrowest point (Fig. 7.1). Depicted cartographically, the ribbon becomes a line, a transformation that simplifies and obscures its historical and ecological significance. On the ground, this meandering corridor has been many things at once: a de facto international boundary, an active war zone, a lively tourist destination, and an unofficial nature preserve (Brady 2012). This is the Korean Demilitarized Zone (DMZ), a visible, tangible boundary inscribed on Korea's landscape and an emotional, political divide embedded in Korean culture.

L. M. Brady (✉)
Department of History, Boise State University, Boise, ID, USA
e-mail: lisabrady@boisestate.edu

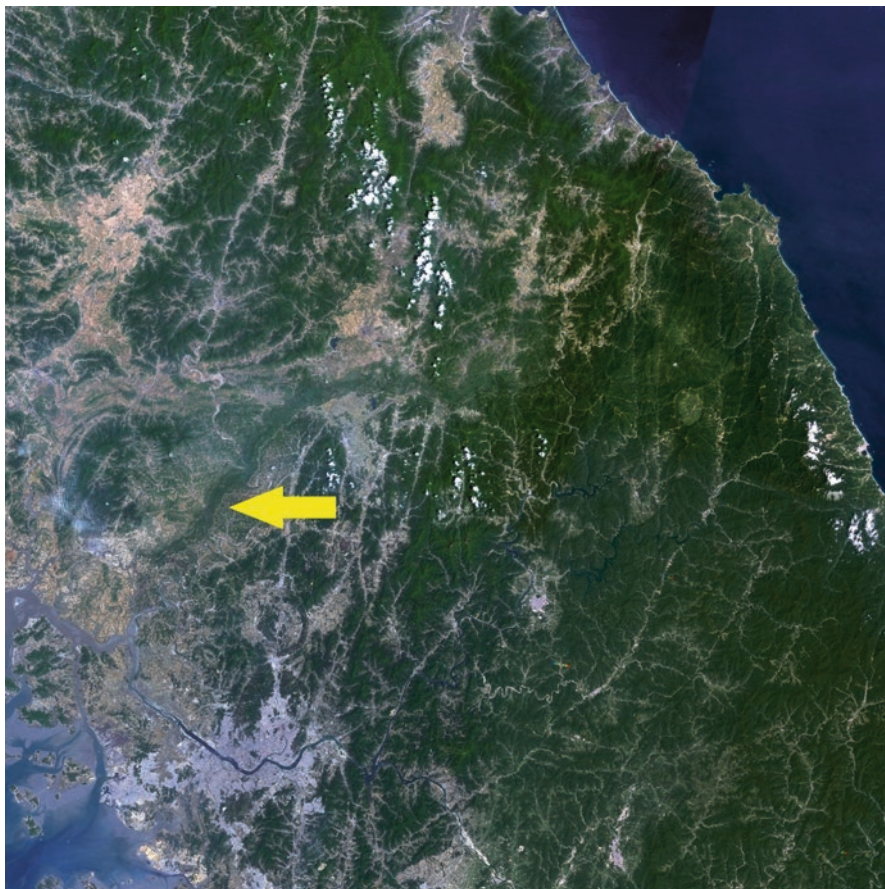


Fig. 7.1 Demilitarized Zone (DMZ) between the Democratic People's Republic of Korea (north) and the Republic of Korea (south) as seen from space. Image courtesy Jesse Allen, NASA's Earth Observatory, Goddard Space Flight Center. Arrow added to indicate western half of the DMZ. <https://earthobservatory.nasa.gov/IOTD/view.php?id=3660>

The DMZ is, on average, 4 km wide, although additional buffer areas on either side (generally cleared of forests and in some cases under agricultural cultivation) broaden its girth by another 4–16 km. Roughly following the 38th parallel, it meanders 250 km east from the Han River estuary through the Taebaek Mountains to the East Sea/Sea of Japan (see Fig. 7.2). Its approximately 1000 square kilometers comprise about one half of one percent of the peninsula's total area (220,847 km²). Although this narrow band of territory is one of the most heavily land-mined and militarized areas on the planet, it is also one of the safest—for nature. The DMZ has provided largely undisturbed habitat for a wide range of species including white-naped and red-crowned cranes, Amur gorals, and wild boar. Recent estimates suggest that at least 2000 species exist within the DMZ's fences (Kim 2013). Such

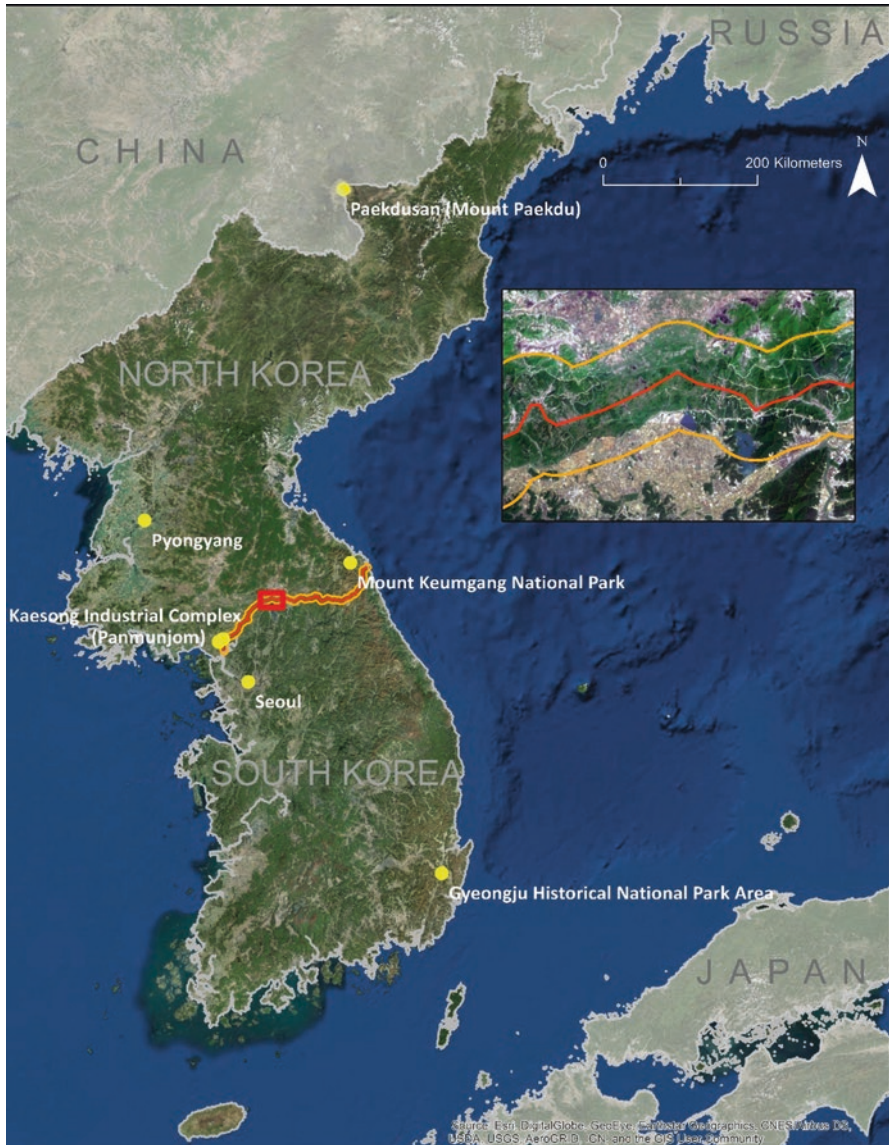


Fig. 7.2 DMZ and other points of interest on the Korean Peninsula. Inset: the buffer zone around the DMZ with detail illustrating the high percent forest cover

proliferation of wildlife, both plants and animals, has attracted a great deal of attention since at least the 1990s. As David Havlick and others have explained, the DMZ has become a tourist destination and an educational site for those interested in Korea's natural history and ecology (Chap. 9 of this book). Moreover, it has become a rallying cry for those wishing to protect what is arguably some of the last wild land left on the peninsula.

A case in point: In 2005, the DMZ Forum—an international, U.S.-based, 501(c)(3) organization—hosted a conference in Seoul, South Korea, featuring panel discussions and keynote addresses by scientists, politicians, and conservationists, including billionaire philanthropist and CNN founder Ted Turner, all of whom supported some kind of protection for the DMZ and its denizens. This was the fifth such conference sponsored and organized by the group. Previous meetings—held in either Seoul or New York City—included talks by world-renowned ecologist Edward O. Wilson, forest ecologist and peace activist Arthur H. Westing, and former U.S. Ambassador to South Korea Stephen Bosworth. Across the years, the gatherings consistently centered on the goal of setting aside the DMZ as a nature preserve, an idea that garnered the attention and support of world leaders like former U.S. president Jimmy Carter and the late president of South Africa, Nelson Mandela. The DMZ Forum, founded in 1997 by two Korean Americans, Dr. Seung-ho Lee and Dr. Ke-chung Kim,¹ began as an effort “to support conservation of the unique biological and cultural resources of Korea’s Demilitarized Zone, transforming it from a symbol of war and separation to a place of peace among humans and between humans and nature” (DMZ Forum).

The DMZ Forum’s founding in 1997 and its early conferences coincided with a thawing of relations between the Republic of Korea (ROK) and the Democratic People’s Republic of Korea (DPRK). During the administrations of Kim Dae-jung (1998–2003) and Roh Moo-hyun (2003–2008), South Korea instituted a policy of engagement and cooperation with North Korea, led by Kim Jong-il from 1997 through 2011, to encourage more open diplomatic dialogue and broader economic partnerships between the two nations (Gelézeau et al 2013). Known as the “Sunshine Policy,” the increased level of communication and cooperation between the Koreas facilitated the creation of joint development projects in the DPRK, among which were the Mount Keumgang Tourist Region on the eastern side of the peninsula in Kangwon Province, nine miles north of the heavily mined border, and the Kaesong Industrial Complex (KIC) located thirty miles northeast of Seoul and six miles above the DMZ (see Fig. 7.2). The industrial complex in particular aimed at strengthening ties between the two nations through mutual economic growth when it opened in 2004 (the DPRK received needed infusions of cash through wages, the South Korean companies got access to cheap labor, and the ROK benefitted from an increased tax base on goods produced there). Beyond the financial incentive, the Sunshine Policy and its affiliated projects intended to break down political barriers so that families separated by the 1950–1953 Korean War could reunite, if not permanently, then at least more easily and more frequently for brief periods. Together, supporters of the policy anticipated that it would help facilitate diplomatic conversations and negotiations, thus bringing the two Koreas closer to more open borders and, potentially, unification, thus making the DMZ obsolete.

¹ Most Korean names in this chapter follow traditional Korean practice of placing the surname first and given names after. Where they do not, name order reflects how the individuals list their names in publications or correspondence.

Although the cooperative projects garnered general support, some concerns about their broader implications arose, especially among those who had watched nature flourish within the confines of the DMZ. Conservation organizations such as the DMZ Forum advocated better relations between the two nations but feared what would happen to the flora, fauna, and ecosystems that enjoyed some protection inside the DMZ's borders should the commercial and industrial developments expand or, in the case of reunification, should the DMZ be erased from the map. They had valid reasons for such apprehension. Both the Keumgang Tourist Region and the KIC required major infrastructure projects, ranging from sewer systems to roadways, all of which could potentially compromise the area's environmental integrity. The transportation routes in particular had direct impact on the border region: getting people to the mountain, workers to the plant, and manufactured goods to market necessitated breaching the DMZ, thus fragmenting ecosystems and interrupting migration paths. On a small scale, this presented manageable disruptions to natural processes; but, if more widely implemented, it could spell disaster for some of the last remaining native and wild habitats on the peninsula.

Beyond infrastructural issues, extensive human activity in the two regions portended environmental degradation, including increased pollution and expanded exploitation of natural resources. Some numbers provide context for these fears: Over one million South Koreans (some estimates place it closer to two million) visited the resort at Mount Keumgang in the decade between its opening in 1998 and 2008, when its doors were shuttered after Park Wang-ja, a tourist from Seoul, was shot and killed by DPRK military personnel after she wandered into a restricted area (Watts 2008; Yonhap News Agency 2014). The KIC, at its height, employed some 54,000 North Korean workers and around 500 South Korean supervisors and generated U.S.\$2.7 billion in inter-Korean trade in 2015 alone (these numbers vary according to source; see, for example, Choe 2016 and Kim 2016). The KIC, which produced watches, small electronics, and textiles, among other consumer goods, operated continuously for a dozen years, with the exception of a temporary work stoppage in 2013 when the DPRK pulled its workers from the factory in opposition to joint ROK-U.S. military training exercises. In early 2016, the ROK shut down the facility to protest the North's ballistic missile and nuclear weapons tests (McCurry 2016).²

The closures of Mount Keumgang and the KIC did not assuage environmentalists' fears, however; if anything, levels of concern rose as the chances for renewed military conflict flared. Diplomatic relations deteriorated under the Lee Myung-bak (2008–2013) and Park Geun-hye (2013–2017) administrations and became even more strained after Kim Jong-un ascended to the DPRK's Supreme Leadership upon the death of his father in December 2011. After several years of belligerent rhetoric and fast-tracking the DPRK's nuclear weapons program, Kim Jong-un

²As of this writing in early 2018, the Kaesong Industrial Complex remains closed. Its future is not clear.

made a surprising reversal in January 2018, opening up dialogue with the ROK and intimating that he was willing to both de-nuclearize the Korean Peninsula and negotiate a final peace. The two nations held an Inter-Korean Summit on April 27, 2018, to discuss the future of the peninsula and signed the Panmunjeom Declaration for Peace, Prosperity, and Unification of the Korean Peninsula.³

To a certain extent, the state of inter-Korean politics—blessed by sunshine or cursed by shadow—changes little but the rhetoric for those who wish to preserve the peninsula’s natural heritage. In good times, nature in the DMZ is portrayed as fragile, susceptible to destruction from unchecked greed and exploitation; in bad times, its environmental health becomes common ground from which pan-Korean cooperation and understanding can grow. In either case, advocates assert, the DMZ must be protected.

That the DMZ exists only as a result of vicious conflict enhances its symbolic significance. Were it a remote forest or mountain valley, degraded by subsistence farmers desperate for food and fuel, or perhaps a wetland destroyed by corporate or state exploitation, the DMZ likely would have few defenders beyond committed environmentalists and local residents. But because it is the physical manifestation of the Korean people’s greatest shared tragedy, and because nature there seems to ignore the ideological competition and animosity that created it, protecting the DMZ has gained significant support inside both Koreas and beyond. This is perhaps because it epitomizes the notion of what this volume calls “collateral value”: unintended positive environmental outcomes of military conflict.

War may be a destructive force, arbitrary in its desolation, but it can also be indiscriminately generative, clearing the way for beneficial developments to occur. Which path a particular war will take—devastation or renovation—and what its ultimate human and environmental consequences will be, are impossible to predict. In 1953, Korea was shattered, with at least two million of its nearly 30 million people dead (military and civilian), millions more displaced and destitute, its rivers degraded and polluted, its farmlands turned into killing fields, and upwards of 65% of its forests destroyed (on population in Korea on eve of war, see Trewartha and Zelinsky 1955; on deforestation estimates, see Jeong et al. 2013). By the 1980s, the Korean people had begun to recover, with both the ROK and DPRK economies experiencing growth, but that came at a significant environmental cost. Today, climate change, industrial development, deforestation, and on-again-off-again tensions between the two Koreas continue to undermine the peninsula’s environmental health.

³The reasons behind this stunning change in policy have yet to be revealed, but there is speculation that a collapse at the DPRK’s nuclear testing facility at Punggye-ri under Mt. Mantap may have contributed (see, for example, Taylor 2018). Other factors may have included pressure from Xi Jin-ping, president of the People’s Republic of China, economic promises from ROK president Moon Jae-in, and changes in U.S. foreign policy under the Donald J. Trump administration (see, for example, Choe 2018 and DeThomas 2018). For the official ROK perspective on the April 27, 2018, Inter-Korean Summit, see <http://www.korea.net/Government/Current-Affairs/National-Affairs?affairId=656>, especially the text of the Panmunjeom Declaration (in English) <http://www.korea.net/Government/Current-Affairs/National-Affairs/view?subId=641&affairId=656&pageIdx=1&articleId=3354>. Accessed May 11, 2018.

The DMZ took a different path after the conflict than the rest of Korea, however. Fenced off from direct development and settlement, it was the only area that presented some semblance of ecological health apart from the national parks that began to crop up in the late 1960s and 1970s. The DPRK currently has six national parks, all of them in mountain settings. South Korea established its first nature-based national park at Jirisan Mountain in 1967; since then, the nation has created a total of 22 parks, with all but one, Gyeongju (est. 1968), focused on natural heritage (Fig. 7.3). Seventeen of the ROK's parks promote mountain landscapes and the remaining four protect marine and coastal areas. According to the Korea National Park Service (KNPS) website, 6.7% of the nation's area is protected within the park system. These reserves, however, are under constant threat from tourism and other human-driven environmental pressures. Bukhansan National Park in the Seoul Capital Region, for example, is surrounded by Seoul's urban sprawl and, therefore, subject to industrial and urban pollution and intense use from over five million visitors each year. Nature in the DMZ, however, is protected from what the KNPS describes as "having too many visitors," a situation that has undermined ecological health at its many parks (KNPS [n.d.](#)). In the DMZ, nature enjoys a respite from constant human pressures.

7.2 Making the DMZ

The DMZ has two creators: nature and war. Both are equally pertinent to the debates over its preservation, with its cultural significance as important to arguments for its preservation as its environmental value (see Havlick, Chap. 9). Out of war's death and destruction came resiliency and rebirth; the dark past has given way to the potential of a bright future; and nature and culture unite to reveal a promising route toward hope and reconciliation. As a place apart—recognizable for its distinctiveness—the DMZ has a relatively brief history (Brady 2008). Officially designated on July 27, 1953, when the ROK and DPRK signed the cease-fire and armistice agreement that ended formal military hostilities (but not the war) on the peninsula, the DMZ not only represents Korea's tragic history, but also epitomizes an optimistic view to the future. It became a place of ecological regeneration upon which Koreans on both sides pinned their dreams of reunification and reconciliation. The DMZ evolved into a living laboratory where aspects of Korea's natural history can be studied, understood, and perhaps preserved. Although the DMZ is deeply political in its origins and function, Koreans across the peninsula and across the world see the DMZ and its ecological promise as a means by which politics can be transcended and where we can find a host of collateral values. In the case of the DMZ, those benefits are both ecological and cultural, categories that are too often depicted as mutually exclusive. There can be no separation between what has human value and what has natural value in the DMZ because, without continued strife, without human conflict, nature would have been as under threat there as it has been everywhere else on the peninsula.

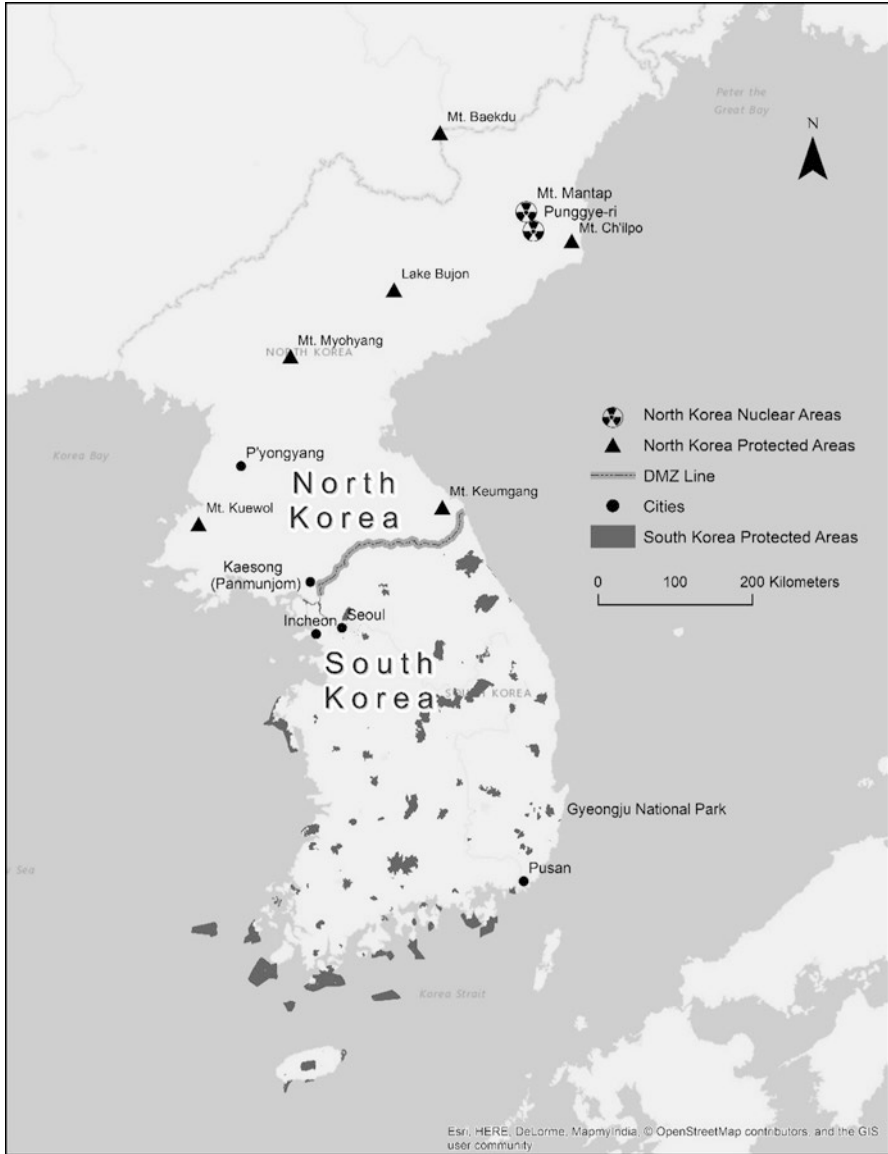


Fig. 7.3 Protected Areas of the Korean Peninsula. North Korean protected areas are indicated with triangles, because their borders are not available

Although today the DMZ is unique in its environmental makeup, such has not always been the case. Prior to becoming a politically significant region in the mid-twentieth century, the area along the 38th parallel was historically and environmentally unremarkable except for being the narrowest part of the peninsula. Indeed, it shared geological, ecological, and climatological characteristics with

many other regions across Korea. It is in this similarity to other areas on the peninsula, however, where it derives its importance from a conservation perspective.

Providing an overview of Korea's physical environment helps to make this point more clearly (Fig. 7.2). Mountains cover the eastern two-thirds of the peninsula, a result of the Precambrian convergence of the Eurasian and Pacific tectonic plates. Throughout the Taebaeksan Range, which runs nearly the entire length of the peninsula north to south like a spine, gneiss and granite compose the basement rock with significant overlays of sedimentary rock deposited over millions of years as sea levels rose and fell. The remainder of the peninsula—that is, the western third—consists of generally flat plains traversed by rivers that typically flow westward to empty into the Yellow Sea, although some smaller streams, mostly in the northern half of the peninsula, debouch into the East Sea (Sea of Japan). Spanning the center of the peninsula east to west (and, incidentally, along the northern border of the DMZ) is the Imjingang Belt, a collisional suture zone of igneous rock created during the Mesozoic period in what some have called the most important event in the peninsula's geological history (Chough 2013, 16). Korea's geological and hydrological characteristics, in combination with its monsoonal climate (most of its precipitation occurs in July and August), leave its soils highly susceptible to erosion, especially where forest and other types of vegetative cover are thin (Woo 1982).

Korea is biologically diverse, with over 41,400 species recorded (and tens of thousands more as yet unrecorded), including at least 2200 native species, some unique to the peninsula and others that can be found in the wider East Asian region. Historically, Korea's fauna included approximately one hundred mammal species, such as the Asiatic black bear (*Ursus thibetanus*), the Amur leopard (*Panthera pardus orientalis*), and the Amur or Siberian tiger (*Panthera tigris altaica*). Most of its larger mammals, especially predator species, are now rare, endangered, or extinct on the peninsula due to habitat loss or overhunting. Smaller mammals include the Amur or long-tailed goral (*Naemorhedus caudatus*), wild boars (*Sus scrofa*), water deer (*Hydropotes inermis*), and the leopard cat (*Prionailurus bengalensis*). The peninsula is also home to a variety of riverine and marine mammals such as otters, sea lions, and dolphins, and to small terrestrial creatures such as hares, voles, and bats. Birds are also prominent members of Korea's animal life, with at least 500 species ranging from herons and kestrels to plovers, owls, and—most famously—white-naped and red-crowned cranes (*Grus vipio* and *Grus japonensis*, respectively). Korea also boasts over 1200 species of fish and at least 15,600 species of insects. Its flora is equally diverse, with more than 5000 species of vascular plants alone. Korea's forests typically contain both evergreen and deciduous plants such as the Korean fir (*Abies koreana*), the Korean red pine (*Pinus densiflora*), and the palmate or Japanese maple (*Acer palmatum*) with understories that incorporate shrubs and herbs such as Korean blueberry (*Vaccinium koreanum*) and Korean ginseng (*Panax ginseng*) (ROK 2014).

Humans, of course, also claim a prominent role in Korea's geological and ecological history. Hominin remains dating to at least 46,000 years ago have been found in Ryonggok Cave, near Pyongyang, DPRK, with agricultural sites dating from between 10,000 and 8000 years ago (Bae and Guyomarc'h 2015; Totman

2004). Human changes to Korea's landscape have taken multiple forms, from terracing of hillsides for agriculture and erosion control purposes, to damming rivers for irrigation and hydroelectric use. Urbanization and industrialization since the 1960s have also taken their toll, ramping up pollution, resource extraction, and habitat destruction, and restructuring the physical landscape through rerouting streams, digging out mines in mountains, and covering vast areas of land with roads and high rises. By far the most extensive changes have been to Korea's forests, which largely coincide with its mountains. As the main source for building materials and fuel, forests long have been under significant pressure as Korea's human population grew and its social structures developed. Forests remain among the peninsula's most important natural resource and continue to face overexploitation, with serious implications for biodiversity and erosion concerns (Fedman 2015; Totman 2004; UNEP 2003).

Such a broad description of the peninsula's environment admittedly elides regional variations that affected the evolution of Korea's culture, society, and ecology over the past several millennia (see Totman 2004 for a more extensive treatment); nevertheless, it provides a useful baseline from which to begin discussion of the DMZ and why it is now the focus of conservation efforts. Importantly, the 4 km wide, 250 km-long swath represents a virtually complete cross-section of the peninsula's geology and ecology. Like the rest of Korea, the DMZ is predominantly mountainous, with its eastern reaches characterized by steep, rugged peaks of highly weathered bedrock and eroded slopes. Scores of rivers and streams wend their way through the zone, depositing silt and watering wetlands as they flow west toward the sea. The western terminus of the DMZ runs through the Han River Estuary, where the still-disputed Northern Limit Line extends into the Yellow Sea, serving as the maritime boundary between the ROK and DPRK. Its forests, marshes, grasslands, and waterways provide food and habitat to a wide variety of flora and fauna including, until 1953, humans (for an accounting of the species in the DMZ, see Kim 2013).

Complete, perhaps, but not pristine, despite assertions to the contrary. The DMZ's current ecology does not conform to ecological conditions on the peninsula prior to human habitation, nor does it reflect the state of nature just prior to the war that created this strange nature preserve. That is, it is not some kind of primordial place where we can see Korea's untouched natural history. Before the DMZ became a line on a map, before it became home to rare species of plants and animals, it supported farmers and villagers who grew crops from its soil, took fish and fresh water from its streams, and collected firewood and building materials from its forests. Its resources provided sustenance for generations of people who altered, managed, and, at times, overexploited the region's natural systems. Three years of war destroyed these long-term interactions between people and nature—and the ecologies such exchanges created—first through near total devastation of the area's physical and cultural landscapes and then by excluding all but military personnel from its newly drawn boundaries. Acknowledging as much does not undermine the value of the DMZ from an ecological standpoint, however; instead, recognizing the unique

quality and history of its nature offers researchers and policy-makers crucial insights into the variety of ecological and cultural values the DMZ can provide.

7.3 Life in the DMZ

One of the major lessons the DMZ can teach us is that nature is resilient. Ecosystems and species can be fragile, even threatened or destroyed by the slightest changes in temperature, precipitation, biodiversity levels, or habitat loss, but nature—the physical and biological world we have come to define as not-human—adjusts, adapts, and evolves. What persists after such changes may or may not resemble what we find familiar, and may or may not be what we value, but it remains nature nevertheless. In the case of the Korean Demilitarized Zone, post-war nature has both real and symbolic worth to Koreans on both sides of the line, as well as to a global community that embraces environmentalist philosophies and appreciates what nature can teach us through science and other forms of knowledge and understanding.

We do not know, precisely, what lives in the DMZ, which is cordoned off by high fences topped with razor wire and guarded by highly trained military personnel. What we do have is a good idea of what *might* live there, based on anecdotal evidence, increasingly comprehensive data collected from the buffer zones on either side of the border, and a few, highly localized biological surveys done during the development phase of the Keumgang Tourist Region and the KIC. As it is in the DMZ, human activity is severely restricted in the buffer areas, with only a small number of farms and villages, and even fewer industrial sites, allowed to operate within their boundaries. Since the 1990s, interest in the DMZ for its ecological promise has resulted in increased access for researchers in the border region as both the DPRK and the ROK seek information about the state of their environmental health and solutions for environmental problems, but to date we do not have a complete accounting of the numbers, types, and diversity of species residing in the DMZ or its buffer zones.

As early as 1995, researchers began formal surveys of the biota in the DMZ corridor, documenting thousands of plant, animal, and insect species (Kim 2013). The majority of these studies have taken place in the southern civilian control zone (CCZ), a one- to fourteen-kilometer wide buffer zone along the entire southern edge of the border, where the central authorities grant research access more often than in the DMZ itself. Studies and projects take place in the analogous buffer zone to the north as well, with the International Crane Foundation's red-crowned and white-naped crane migratory reserve project in Cheorwon as the best example (ICF.org). There are also a small number of sites where ecological studies have been conducted within the DMZ, specifically near the Panmunjeom Joint Security Area, along the KIC train line, and in Cheorwon County, Kangwon Province (Kim 2013).

Among the first times scientists were allowed into the DMZ itself was during construction of the highway and railroad servicing the KIC. These infrastructure projects provided a much-anticipated opportunity to do field research and find out

what actually existed between the razor-wire fences. Among those scientists was Kwi-gon Kim, professor of planning and author of *The Demilitarized Zone of Korea* (2013). According to Kim, researchers have identified around 2000 species of plants and animals, which he estimates to be approximately two-thirds of the total number that likely exist in the entire DMZ region. He notes, however, that only about 10% of the species in the DMZ have been formally documented (Kim 2013, xv–xvi). Among the species documented in the DMZ/CCZ research areas, over two dozen are legally protected by various South Korean governmental agencies and some are listed on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species (see Table 7.1).

The DMZ is more valuable than the sum of its parts, however. Although each species of plant and animal has inherent ecological value, combined they make significant contributions to the peninsula's overall environmental health. Thus, conservation of the DMZ's species, endangered, threatened, or otherwise, is only one goal for scientists and policy makers. Maintenance of ecosystems is equally important, perhaps even a greater priority, as individual species cannot thrive if their habitats are compromised or destroyed. Thus arises the impetus for protecting as much of the DMZ intact as possible.

7.4 DMZ to TBPP

So, what can a protected DMZ do? Who or what could it benefit? What concerns are associated with the creation of a bilateral, multilateral, or UN-supported conservation area between the two Koreas? What could happen if the Korean War officially ends and a unified nation is once again restored to the peninsula? These are among the many questions supporters (and opponents) of turning the DMZ into a nature reserve ask as they look toward the future.

Since at least the early 1990s, various entities within and outside of the Korean peninsula have clamored for the DMZ to not only more closely resemble its name—demilitarized—rather than its character—heavily armed and guarded—but to also become both a symbol of and first step toward inter-Korean reconciliation and reunification. Prominent among such calls are suggestions for turning to nature as common ground. The underlying premise is that mutual respect for the natural environment, as well as shared understanding that healthy ecosystems benefit human communities, could override the ideological impasse that has dominated the peninsula since the Korean War. This turn toward nature as a neutral arbiter between the DPRK and the ROK has resulted in a variety of proposals, many of which revolve around turning the DMZ into some kind of transboundary peace park (Kim 2007).

The notions that nature protection both requires and fosters cooperation and that nature parks located on national (or other territorial) boundaries can become peace parks predate efforts in Korea by at least a century (Chester 2006, 20). The second quarter of the twentieth century witnessed a number of boundary-area regions set aside for conservation or preservation purposes, with peace and cooperation as

Table 7.1 Examples of species in the DMZ/CCZ research areas

Species	ROK Designation and Protecting Agency ^a	IUCN Red List Status ^b	Notes
Northern Pipevine (<i>Aristolochia contorta</i>)	Rare; Korea Forest Service	Not evaluated	Important to traditional Korean medicine
Red-Crowned Crane (<i>Grus japonensis</i>)	Endangered Species I; Ministry of Environment	Endangered ver 3.1 ; population trend decreasing	Culturally important
White-Naped Crane (<i>Grus vipio</i>)	Endangered Species II; Ministry of Environment, National Heritage	Vulnerable ver 3.1 ; population trend decreasing	Culturally important
Bean Goose (<i>Anser fabalis</i>)	Endangered Species II; Ministry of Environment	Least Concern ver 3.1 ; population trend decreasing	
Eurasian Black or Cinereous Vulture (<i>Aegypius monachus</i>)	Endangered Species II; Ministry of Environment, National Heritage	Near Threatened ver 3.1 ; population trend decreasing	
Eurasian Buzzard (<i>Buteo buteo</i>)	Endangered Species II; Ministry of Environment	Least Concern ver 3.1 ; population trend stable	
Eurasian Otter (<i>Lutra lutra</i>)	Endangered Species I; Ministry of Environment, National Heritage	Near Threatened ver 3.1 ; population trend decreasing	
Leopard Cat (<i>Felis bengalensis euphilura</i>)	Endangered Species II; Ministry of Environment, National Heritage	Not evaluated	
Yellow-throated Marten (<i>Martes flavigula koreana</i>)	Endangered Species II; Ministry of Environment	Least Concern ver 3.1 ; population trend decreasing	Now considered to be the apex predator on the peninsula with the regional extinction of the Siberian Tiger (<i>Panthera tigris</i> spp. altaica) ^c
Long-tailed goral (<i>Naemorhedus caudatus</i>)	Endangered Species II; Ministry of Environment	Vulnerable ver 3.1 ; population trend decreasing	
Longhorn Beetle (<i>Callipogon relictus Semenov-Tian-Shansky</i>)	Endangered Species II; National Heritage	Not evaluated	

(continued)

Table 7.1 (continued)

Species	ROK Designation and Protecting Agency ^a	IUCN Red List Status ^b	Notes
Dragonfly (<i>Nannophya pygmaea</i> <i>Rambur</i>)	Endangered Species II; Ministry of Environment	Least Concerned ver 3.1 ; population trend stable	
Freshwater Gudgeon or Kogori (<i>Gobiobotia macrocephala</i>)	Endangered Species II; Ministry of Environment	Not evaluated	Found only in Korea ^d
Amur rat snake (<i>Elaphe schrenckii</i>)	Endangered Species I; Ministry of Environment, National Heritage	Not evaluated	

^aKim (2013, 186–189)

^bRepublic of Korea Ministry of Environment, Government Press Release, “The yellow-throated marten to be the apex predator,” 14 Jan 2013. <http://www.korea.net/Government/Briefing-Room/Press-Releases/view?articleId=1923>. Accessed 16 March 2017

^c*Gobiobotia macrocephala*. <http://www.fishbase.se/summary/25580>. Accessed March 16, 2017

^dThe IUCN Red List of Threatened Species. Version 2016–3. www.iucnredlist.org. Downloaded 16 March 2017

additional benefits. Among the first was the Waterton-Glacier International Peace Park between Alberta, Canada, and Montana, U.S.A., established in 1932. That same year, Poland and Czechoslovakia created a transboundary park in the Pieniny Mountains (Chester 2006, 21; Hoenig 2014). In the first case, distinct national parks dedicated to the conservation of nature antedated the international agreement identifying them as a joint peace park. In the latter, conservation and peace were proposed as mutually constitutive; there, natural scientists advocated for the creation of a transnational park that would preserve important landscapes while at the same time offer a peaceful solution to border disputes between the two nations after the dissolution of the Habsburg Empire (Hoenig 2014). Interest in transboundary parks—whether designated as peace parks or not—expanded greatly over the course of the twentieth century, so much so that by the second decade of the twenty-first century, over 200 such parks or conservation areas had been formed (Vasiljević et al. 2015, 5).

The most recent IUCN definition of a protected area is: “A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Vasiljević et al. 2015). The IUCN identifies a Transboundary Conservation Area (TCA) as a protected region that straddles international borders, further delineating them as Transboundary Protected Areas, Transboundary Conservation Landscapes and/or Seascapes, and Transboundary Migration Conservation Areas. Additionally, the IUCN designates Parks for Peace (formerly called peace parks) as those TCAs that are “dedicated to the promotion,

celebration and/or commemoration of peace and cooperation” (Vasilijević et al. 2015, 8–13). According to the IUCN, peace parks may exist anywhere, but Parks for Peace are inherently transboundary in that they “celebrate the endurance of peace and the commemoration of peace in a region,” like Waterton-Glacier International Peace Park; or, they “help to reinforce peace and cooperation” as in the Cordillera del Condor (see Chap. 8 in this book); or, they “could be used to promote peace at some point in future” (Vasilijević et al. 2015, 14). The example provided by the IUCN to illustrate this last type of Park for Peace is Korea’s DMZ, which despite international support and local action, has remained a vision rather than a reality (Vasilijević et al. 2015, 14 and 42).

Large-scale military operations are among the greatest challenges to creating a Park for Peace in the DMZ. Such exercises have taken place within or near the DMZ and CCZ, on land and in the Yellow Sea, every year since the 1953 armistice. The ROK conducts its joint military training exercises with the United States every spring. Without fail the DPRK characterizes those activities as hostile to its security (despite its own annual winter training exercises) and threatens to retaliate with great shows of force (Cha 2016, 2017; Collins 2014). The North Korean threats, which have included warnings of nuclear attack, have yet to become direct action, with the possible exception of the *Cheonan* Incident of March 26, 2010, in which 46 ROK sailors died when their vessel, the *Cheonan*, sank in the Yellow Sea after being hit by what appears to have been a DPRK torpedo (the DPRK denies any involvement in the event; see Lendon 2010).

There are also more mundane obstacles to the possibility of a park in the DMZ. As Charles Chester notes in *Conservation Across Borders*, transboundary protection areas (TBPAs) raise the thorny issue of prioritizing wildlife and ecosystems over human health and subsistence (Chester 2006, 28–29). This is especially true when those living in or around a potential TBPA (or any proposed nature protection area) suffer from low standards of living, food insecurity, resource scarcity, or other deprivations. Such is the case on the Korean peninsula. While wealth and health indicators are relatively high in the ROK, they are among the lowest in the world in the DPRK. According to the CIA World Factbook (2017), South Korea and North Korea rank, respectively, 14 and 115 in comparative GDP and 45 and 211 in per capita GDP. While these data can be revealing, they do not tell the whole story. Between the mid-1990s and 2009, the DPRK suffered terrible famine, resulting in an estimated 330,000 deaths, due to a series of droughts and floods, general economic mismanagement, and a critical reduction in aid after the demise of the Soviet Union. Setting aside land for nature seems to fly in the face of humanitarian need.

Although many transboundary conservation areas have proven effective from both ecological and political standpoints (Ali 2007), transforming the DMZ from a warzone into an EcoPark poses a number of problems. One of these is, simply, where to begin? Ending the war and either establishing diplomatic relations between the two Koreas or reuniting them into one nation may seem the logical starting point; however, according to Arthur Westing, who has written extensively on transboundary parks and on the potential for one in the DMZ, setting aside the region in whole or part “would certainly be best accomplished before such time that a treaty is

adopted” (Westing 2010, 20). Westing’s concern is that without a prior agreement to protect the ecosystems and species of the DMZ, development—agricultural, industrial, commercial, and urban—would quickly encroach and likely eliminate the area’s environmental health and value. Saleem Ali has made a similar point in his work on the Cordillera del Condor Corridor, arguing that the “‘collateral values’ of natural conservation that may be generated through conflict are vulnerable when peace is achieved without proper monitoring and enforcing mechanisms in place” (Chap. 8 of this book). Yet another obstacle to a peace park in the DMZ is a historical lack of commitment to nature preservation on the peninsula. Depending on the source and the variables included, protected areas comprise only 3–6% of the peninsula’s entire territory (Westing 2010; UNEP 2003; IUCN 2009; World Bank 2017).⁴

The political, social, and economic divides across the DMZ may pose significant problems for conservation inside the DMZ, but they need not be insurmountable. As events in early 2018 demonstrated, anything is possible. The previous year had seen deepening tensions on the peninsula, including threats of nuclear war; in April 2018, the two Koreas had pledged to work toward a lasting peace (Choe 2017; McCurry 2017; Shorrock 2017; Choe 2018; DeThomas 2018). The thawing of inter-Korean relations opens the door for finding some common ground inside the DMZ. Within its limits lie sources for environmental and human wellbeing that are necessary for any society to thrive, regardless of ideological stance. Through its forests and rivers, the DMZ provides important ecosystem services (ES) that, if conserved, can benefit Koreans on either side of the border now and in the future. Conservation predicated on the ES model, when construed in purely economic terms, has garnered strong critique (Dempsey and Robertson 2012), but support for clean air and water and for stable hydrological and soil structures—key factors in a different interpretation of ES that directly connects human welfare to ecological health (MEA 2005, v)—may very well be the answer to debates over the future of the DMZ.

7.5 Out of War, Peace

Rife with uncertainty, uncontrollable in the extreme, war’s execution and outcomes can rarely be predicted. The Korean Peninsula is no stranger to conflict. Sharing borders with China and Russia and separated at its closest point from Japan by only the 120-mile wide Korea Strait (or Tsushima Strait), Korea has been the object of expansionist empires for centuries. Competition between its larger neighboring

⁴Terrestrial protected areas are totally or partially protected areas of at least 1000 hectares that are designated by national authorities as scientific reserves with limited public access, national parks, natural monuments, nature reserves or wildlife sanctuaries, protected landscapes, and areas managed mainly for sustainable use. Marine areas, unclassified areas, littoral (intertidal) areas, and sites protected under local or provincial law are excluded. Source: United Nations Environment Programme and the World Conservation Monitoring Centre, as compiled by the World Resources Institute, based on data from national authorities, national legislation and international agreements.

powers made Korea the site of numerous conflicts, including the Imjin War (1592–1598) initiated by Japan, the Manchu (Jurchen or Qing) invasions in 1627 and 1636, and—after two hundred years of relative peace—the First Sino-Japanese War (1894–1895) and the Russo-Japanese War (1904–1905), each of which had control over Korea as an aim. These military confrontations had important consequences for Korea politically and economically, especially the later wars: China's loss in the First Sino-Japanese War paved the way for Japan to exert greater influence on the Korean peninsula and Russia's loss in the Russo-Japanese War led directly to Korea's formal colonization and annexation by Japan in the early twentieth century (Kang 2010; Lewis 2015; Totman 2004). All of these conflicts also had environmental consequences for the peninsula, resulting in widespread deforestation during the early wars due to increased logging to supply military needs and, later, under colonial rule, expanded exploitation of forest, mineral, and agricultural resources to support Japan's domestic and imperial growth (Totman 2004; Lee 2018; Fedman 2018).

The end of World War II and of Japan's colonial state in Korea promised self-determination on the peninsula. But deep divisions among the Korean populace eventually led to war. Both sides hoped to rule over a single nation, yet decades later the peninsula hosts two governments and two unique polities. For a people that had for centuries been one of the most culturally, ethnically, and linguistically homogeneous nations on Earth, the middle of the twentieth century wrought enormous change. Since the July 1953 ceasefire, the Korean peninsula has been divided, with significant consequences for both human and natural systems. With the end of official combat, however, the physical manifestation of that rift has largely escaped the pressures of industrial development and economic competition.

From the standpoint of those who lived through the war that created the DMZ and for those who still have family on the other side of its borders, the region serves as a painful reminder of what was lost: communities divided by politics and war; farmland transformed into minefields; rivers, forests, and mountains made inaccessible for subsistence and recreation. But for some, it also represents hope for the future. Because its land and natural resources have not been developed, the DMZ has become a sort of storehouse for flora and fauna that have no viable habitat elsewhere on the peninsula. Those who advocate for its preservation do so with careful respect for those who wish to see a single Korea and who view the DMZ as the physical manifestation of the socio-political obstacles to that goal. Rather than dismiss those concerns out of hand, DMZ preservation activists view the cultural and ecological importance of the border as mutually constitutive. Protecting the DMZ's natural systems would honor long-held connections between the Korean people and their environment while providing a place to interpret and commemorate a tragic period in their recent history.

According to Seung-ho Lee, president of the DMZ Forum, natural and historic landscapes within the DMZ require protection: "Geological features in the DMZ such as a columnar joint located in the Hantan River and near the Imjin River and Cheorwon's lime rock cave have geologically high value for conservation. Within the DMZ, there are numerous historical and archeological treasures that have yet to be explored and preserved for posterity, including Gungye, an ancient capital city

near Cheorwon. Important sites from the Choson period also exist in the DMZ, awaiting study and preservation. Many battlegrounds and other sites from the Korean War are located inside the DMZ. These, too, need to be examined and preserved for future cultural and historical study” (Lee 2010). In undertaking such protective action, Lee believes the political tensions in the region could be ameliorated, stating, “Collaborative efforts to turn Korea’s Demilitarized Zone (DMZ) into a UNESCO World Heritage Site can serve as a trust-building measure” (Lee 2010). Thus, in both its material and symbolic forms, the DMZ reifies the discontinuities between north and south but, in very important ways, also serves as a green ribbon of hope, a place that commemorates the human sacrifices of military conflict and protects a variety of ecosystems and species that are found nowhere else on the peninsula.

Acknowledgements The author wrote this chapter during her fellowship at the Rachel Carson Center for Environment and Society (Munich, Germany). She would like to thank all the RCC staff and Fellows for their support. She also thanks Boise State University for supporting this research through a sabbatical award, as well as the volume editors for their keen insights, suggestions for improvement, and assistance in creating the maps.

References

- Ali, S. H. (Ed.). (2007). *Peace parks: Conservation and conflict resolution*. Cambridge: MIT Press.
- Bae, C., & Guyomarc’h, P. (2015). Potential contributions of Korean Pleistocene hominin fossils to palaeoanthropology: A view from Ryonggok Cave. *Asian Perspectives: The Journal of Archeology for Asia and the Pacific*, 54(1), 31–57.
- Brady, L. (2008). Life in the DMZ: Turning a diplomatic failure into an environmental success. *Diplomatic History*, 32, 4.
- Brady, L. (2012). Korea’s green ribbon of hope: History, ecology, and activism in the DMZ. *Solutions*, 3:1. <https://www.thesolutionsjournal.com/article/koreas-green-ribbon-of-hope-history-ecology-and-activism-in-the-dmz/>. Accessed 1 May 2017.
- Cha, V. (2016, March 7). How serious are North Korea’s pre-emptive attack threats? *Center for Strategic and International Studies Korea Chair Snapshot*. <https://www.csis.org/analysis/how-serious-are-north-korea%E2%80%99s-pre-emptive-attack-threats>. Accessed 18 Mar 2017.
- Cha, V. (2017, March 1). DPRK provocations likely during U.S.-ROK military exercises. *Center for Strategic and International Studies Korea Chair Snapshot*. <https://www.csis.org/analysis/dprk-provocations-likely-during-us-rok-military-exercises>. Accessed 18 Mar 2017.
- Chester, C. (2006). *Conservation across borders: Biodiversity in an interdependent world*. Washington, DC: Island Press.
- Choe, S.-H. (2016). South Korea to shut joint factory park, Kaesong, over nuclear test and rocket. *New York Times*. https://www.nytimes.com/2016/02/11/world/asia/north-south-korea-kaesong.html?_r=0. Accessed 17 Mar 2017.
- Choe, S.-H. (2017, July 4). US confirms North Korea fired intercontinental ballistic missile. *New York Times*. <https://www.nytimes.com/2017/07/04/world/asia/north-korea-missile-test-icbm.html>. Accessed 27 July 2017.
- Choe, S.-H. (2018). South Korea hands Kim Jong-un a path to prosperity on a USB drive. *New York Times*. <https://www.nytimes.com/2018/05/10/world/asia/kim-jong-un-north-korea-south-usb-economy.html>. Accessed 11 May 2018.
- Chough, S. K. (2013). *Geology and sedimentology of the Korean peninsula*. London: Elsevier.

- Collins, R. (2014). *A brief history of the US-ROK combined military exercises*. 38North.org. <https://www.38north.org/2014/02/rcollins022714/>. Accessed 11 May 2018.
- Dempsey, J., & Robertson, M. M. (2012). Ecosystem services: Tensions, impurities, and points of engagement within neoliberalism. *Progress in Human Geography*, 36(6), 758–779. <https://doi.org/10.1177/0309132512437076>.
- DeThomas, J. (2018). *Obituary: The maximum pressure policy*. 38North.org. <https://www.38north.org/2018/05/jdethomas050918/>. Accessed 11 May 2018.
- DMZ Forum. *DMZ Forum mission and vision*. <http://www.dmzforum.org/about/mission-and-vision>. Accessed 30 Mar 2017.
- Fedman, D. (2015). *The saw and the seed: Forestry and the politics of conservation in colonial Korea, 1895–1945*. Dissertation, Stanford University.
- Fedman, D. (2018). Wartime forestry and the “low temperature lifestyle” in late colonial Korea, 1937–1945. *Journal of Asian Studies*, 77, 2.
- Gelézeau, V., De Ceuster, K., & Delissen, A. (Eds.). (2013). *De-bordering Korea: Tangible and intangible legacies of the sunshine policy*. New York: Routledge.
- Hoenig, B. (2014). Profoundly national yet transboundary: The Tatra National Parks. Environment & Society Portal, *Arcadia* no. 16. Rachel Carson Center for Environment and Society. <http://www.environmentandsociety.org/node/6385>. Accessed 17 Mar 2017.
- International Crane Foundation. <http://www.icf.org>. Accessed 23 Mar 2017.
- IUCN. (2009). *Korea's protected areas: Evaluating the effectiveness of South Korea's protected areas system*. International Union for the Conservation of Nature. <https://portals.iucn.org/library/sites/library/files/documents/IUCN-2009-035.pdf>. Accessed 3 Apr 2018.
- Jeong, S.-J., Ho, C.-H., Choi, S.-D., Kim, J., Lee, E.-J., et al. (2013). Satellite data-based phenological evaluation of the nationwide reforestation of South Korea. *PLoS One*, 8(3), e58900. <https://doi.org/10.1371/journal.pone.0058900>.
- Kang, D. C. (2010). *East Asia before the west: Five centuries of trade and tribute*. New York: Columbia University Press.
- Kim, K. C. (1997). Preserving biodiversity in Korea's demilitarized zone. *Science*, 278, 242–243.
- Kim, K. C. (2007). Preserving Korea's demilitarized corridor for conservation: A green approach to conflict resolution. In S. H. Ali (Ed.), *Peace parks* (pp. 239–260). Cambridge, MA: MIT Press.
- Kim, K.-G. (2013). *The Demilitarized Zone (DMZ) of Korea: Protection, conservation and restoration of a unique ecosystem*. London/Berlin/Heidelberg: Springer.
- Kim, M.-S. (2016). Trade with N. Korea falls to near zero. *Choson Ilbo*. http://english.chosun.com/site/data/html_dir/2016/05/13/2016051301098.html
- Korea National Park Service (KNPS). (n.d.). *National parks of Korea*. <http://english.knps.or.kr/Knp/AboutNP.aspx?MenuNum=1&Submenu=AboutNP>. Accessed 27 July 2017.
- Lee, S.-H. (2010). *Policy forum 10–046: A new paradigm for trust-building on the Korean peninsula – Turning Korea's DMZ into a UNESCO World Heritage Site*. <http://nautilus.org/napsnet/napsnet-policy-forum/a-new-paradigm-for-trust-building-on-the-korean-peninsula-turning-koreas-dmz-into-a-unesco-world-heritage-site/>. Accessed 1 May 2017.
- Lee, J. (2018). Postwar pines: The military and the expansion of state forests in post-Imjin Korea, 1598–1684. *Journal of Asian Studies*, 77, 1–14.
- Lendon, B. (2010). *S. Korea's final report affirms Cheonan was sunk by North Korean torpedo*. CNN.com. <http://www.cnn.com/2010/WORLD/asiapcf/09/13/south.korea.cheonan.report/index.html>. Accessed 11 May 2018.
- Lewis, J. B. (2015). *The East Asian War, 1592–1598: International relations, violence, and memory*. London: Routledge.
- McCurry, J. (2016). *Seoul shuts down joint North-South Korea Industrial Complex*. <https://www.theguardian.com/world/2016/feb/10/seoul-shuts-down-joint-north-south-korea-industrial-complex-kaesong>. Accessed 17 Mar 2017.

- McCurry, J. (2017). Who is Moon Jae-In, South Korea's new president? *The Guardian*. <https://www.theguardian.com/world/2017/may/09/moon-jae-in-the-south-korean-pragmatist-who-would-be-president>. Accessed 27 July 2017.
- Millennium Ecosystem Assessment (MEA). (2005). *Ecosystems and human well-being: Current state and trends*. Washington, DC: World Resource Institute.
- Republic of Korea (ROK). (2014). *The fifth national report to the convention on biological diversity*. <https://www.cbd.int/doc/world/kr/kr-nr-05-en.pdf>. Accessed 27 July 2017.
- Shorrock, T. (2017). South Korean President Moon Jae-In prepares for a difficult meeting with Trump. *The Nation*. <https://www.thenation.com/article/south-korean-president-moon-jae-in-prepares-for-a-difficult-meeting-with-trump/>. Accessed 27 July 2017.
- Taylor, A. (2018). North Korea's mountain mystery: Is Punggye-ri nuclear test site still functional? *Washington Post*. https://www.washingtonpost.com/news/worldviews/wp/2018/04/25/north-koreas-mountain-mystery-is-punggye-ri-nuclear-test-site-still-functional/?noredirect=on&utm_term=.89a2f9f39b15. Accessed 11 May 2018.
- The World Factbook. (2017). Washington, DC: Central Intelligence Agency. <https://www.cia.gov/library/publications/the-world-factbook/>. Accessed 18 Mar 2017.
- Totman, C. (2004). *Pre-industrial Korea and Japan in environmental perspective*. Leiden: Brill.
- Trewartha, G. T., & Zelinsky, W. (1955). Population distribution and change in Korea 1925–1949. *Geographical Review*, 45, 1–26.
- United Nations Environment Programme (UNEP). (2003). *DPR Korea: State of the environment*. Klong Luang/Pathumthani: United Nations Environment Programme.
- Vasilijević, M., Zunckel, K., McKinney, M., Erg, B., Schoon, M., & Rosen Michel, T. (2015). *Transboundary conservation: A systematic and integrated approach* (Best Practice Protected Area Guidelines Series no 23). Gland: IUCN. <https://portals.iucn.org/library/sites/library/files/documents/PAG-023.pdf>.
- Watts, J. (2008). South Korean tourist shot dead in North Korea. *The Guardian*. <https://www.theguardian.com/world/2008/jul/11/korea>. Accessed 15 Mar 2017
- Westing, A. H. (2010). Towards environmental sustainability and reduced tensions on the Korean Peninsula. *Environment: Science and Policy for Sustainable Development*, 52, 20–23.
- Woo, B.-M. (1982). Soil erosion control in South Korea. *Journal of Soil and Water Conservation*, 37(3), 149–150.
- World Bank. (2017). *World Bank open data*. <http://data.worldbank.org/indicator/ER.PTD.TOTL.ZS?view=chart>. Accessed 19 Mar 2017.
- Yonhap News Agency. (2014). Hyundai Asan faces 1 tln won loss on N. Korea tour suspension. <http://english.yonhapnews.co.kr/northkorea/2014/11/18/73/0401000000AEN2014111800210320F.html>. Accessed 17 Mar 2017.