

## ENVIRONMENTAL SUSTAINABILITY FOR THE KOREAN PENINSULA: ROLE OF THE DMZ\*

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June of 1950 was a momentous month for me, what with my graduating from college, being commissioned as a Second Lieutenant in the Marine Corps, learning of the onset of war in some place called Korea and then, together with two classmates of mine, receiving orders for "duty beyond the seas" to that strange far-off peninsula tucked away somewhere across the Pacific in northeastern Asia. However, I was in due course to become considerably more familiar with it, having quite soon spent a year of combat there as an artillery officer — among other things, thereby actively contributing to the wholesale destruction being perpetrated there. I saw the vegetation being uprooted, the earth churned up, habitats laid waste, and, of course, so many soldiers, civilians, livestock, and wildlife losing their lives. I myself was most fortunate to survive that experience, although both of my classmates were killed in action.

My post-Marine Corps training as a forest ecologist, together with the interest awakened by my direct participation in the environmental disruption brought about by our military activities in Korea, has in fact led to my continuing efforts over the years to reduce such wartime environmental damage to the extent possible, and also to provide for its subsequent restoration. Those aims led in time to a number of peaceful visits to Korea for purposes of facilitating North-South cooperation on establishing a transfrontier park for peace and nature, doing so initially on behalf of the United Nations Environment Programme, at the request of both Koreas in 1991 to the United Nations Secretary-General; and, more recently, upon invitation by the South Korean government and in cooperation with the *DMZ Forum*. In what follows I very much hope that we shall all see that the Korean Demilitarized Zone (DMZ) established at the end of the war to provide a buffer between the two Koreas (which, as it happens, I helped to survey in 1952), which not only can, but must play a central long-term contribution to environmental sustainability for that peninsula.

To provide a bit of orientation, the Korean peninsula is in size only a bit less than twice that of the State of New York, and (as we all know) has been divided into two sovereign states, the Democratic People's Republic of [North] Korea and the Republic of [South] Korea, the former a bit larger, but less densely populated, than the latter. And for a region such as the Korean peninsula to offer an appropriate home both for its human inhabitants (with their crops and livestock) and for as many as possible of the remaining native plants and animals, requires a combination of (1) the gentle use of all those lands long sequestered for agriculture, industry, and so forth, and (2) the setting aside of some modest fraction as protected areas for the native wildlife. A minimally adequate combined expanse of such needed nature reserves is

often suggested by international conservation organizations, as an achievable goal, to be at least 12% of a region's total area, although I must add that ecologists insist that fraction to be insufficient to fully achieve long-term environmental sustainability.

I shall not here dwell upon the overall impact on the land being exerted by the inhabitants of the two Koreas except to note that much of the industrialization in both North and South has yet to be equipped with adequate pollution controls. And much forest land unsuited for agriculture has been cleared for farming to satisfy the needs of a peninsula more than twice as densely populated as the State of New York (even with its New York City!). This has been driven in part by food shortages especially in North Korea (where food production *per caput* has actually been declining for the past two decades) — and with those food shortages occurring even though population changes in the two Koreas have been minimal in recent times.

For the Korean peninsula, the setting aside of a combined total of suitably distributed areas for nature representing 12% of its area would be the rough equivalent of having one Adirondack State Park in each of the two Koreas (or, to express it differently, it would be the equivalent of a combined area just a bit larger than the State of New Jersey). Now for the bad news: Currently, only about 3% of the Korean peninsula is protected for nature — a bit less in the North (2.6%), and a bit more in the South (3.6%). As we have seen, this is a value far below the necessary minimum for any region's long-term environmental and associated human health.

The present paucity of protected habitats on the Korean peninsula has deprived the peoples of the region of the many subtle continuing benefits deriving from adequate expanses of natural areas, the so-called ecosystem services. Among those often overlooked benefits of natural areas I should mention: purification of water and air, amelioration of local climate, limiting of erosion and protection of watersheds, making available wild medicinal plants, offering tranquility and inspiration, and providing opportunities both for scientific research and eco-tourism. This substantial Korean paucity of bio-sanctuaries has also inexorably led to at least some extinctions and to the likelihood that others will follow suit. Indeed, listed among the wildlife currently known to be in danger of extinction on the Korean peninsula, primarily for lack of adequate habitat, are at least 29 species of birds, 6 of mammals, and even 1 each of a salamander and a dragonfly.

But, as one might readily imagine, finding new areas to set aside as nature reserves is a formidable challenge in a region where so much of the land is already being utilized — not to say, over-utilized — for all of the immediately necessary human demands. Here is where the DMZ comes into its own. This east-west green belt across the middle of the Korean peninsula has now been protected since the end of the Korean War, but only on a *de facto* basis. The DMZ is 2½ miles wide and

approximately 153 miles long, thus covering about 380 square miles, which is an area only a little larger than that occupied by the five boroughs of New York City — a mere ½% of the peninsula.

Although representing only ½% of the Korean peninsula, and thus really no great loss to overall future development, it must be realized by one and all that the DMZ should become the centerpiece of any effort to work toward environmental sustainability for the region. Its ecological importance derives in significant part from traversing a representative sample of most of the peninsula's diverse ecosystems — lowland and upland, wetland and mountain, woodland and grassland — most of them now largely unmolested by human action for over half a century. This has permitted those diverse ecosystems to be well on their way to recovering naturally from their extraordinarily serious wartime and other prior human disruptions.

Thus, the DMZ is quickly becoming an unparalleled living museum and repository for much of the region's flora and fauna (just possibly even including bears and tigers). Indeed, perhaps one-third of the peninsula's plants and up to one-half of its mammals, as of its birds, can be found living in the DMZ during all or part of the year. Since the DMZ serves as part of the annual migratory route of various northeast Asian birds, including cranes, egrets, spoonbills, storks, and ibises, it now contributes additionally to the long-term well-being of bird life in nearby China, Russia, and even Japan. And by way of one telling example, of the several dozen species on the peninsula known to be in danger of extinction, 29 are birds of which at least 15 are found in the DMZ.

Up to now, I have dwelt only on the very serious environmental (and derivative social) problems faced by the two Koreas, suggesting that it was to everyone's clear benefit, both North and South, to ameliorate them. I have even tried to implicitly plant the notion that there exists a moral obligation to past, present, and future generations to do so. I thus wish to close by suggesting that something as benign, apolitical, beneficial, and uplifting to all on both sides of the Line of Demarcation as the protection in perpetuity of substantial portions of the DMZ should be pursued irrespective of the seemingly endless waxing and waning of North-South political tensions and other stumbling blocks to this vision.

And, who knows, cooperation between North and South Korea in this area of so-called low politics might not only serve as a confidence-building measure that will ultimately contribute to the easing of the cross-border confrontations of the so-called high-politics currently at such a low ebb, but also as a model for other troublesome border regions in the world. So, I trust I have succeeded in making it clear why all of us should be supporting the mission of the *DMZ Forum* to transform the Korean Demilitarized Zone from a symbol of war to a place of peace among humans and between humans and nature.

**Note to the title:**

\* Presentation at the **DMZ Forum** Special Event, held at the Nabi Gallery (137 W. 25th St, New York City) on 25 June 2009. The author is a forest ecologist (Columbia, A.B., 1950; Yale, M.F., 1954; Yale, Ph.D., 1959), former artillery officer in the US Marine Corps, Research Forester with the US Forest Service, Professor of Ecology at various colleges and universities, Senior Researcher at both the Stockholm International Peace Research Institute and Peace Research Institute Oslo, and Consultant in Environmental Security to the UN Environment Programme, UN Institute for Disarmament Research, Unesco, the World Bank, the International Committee of the Red Cross, IUCN, WWF, and other intergovernmental and national agencies. He serves on the Board of the **DMZ Forum**.

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## Appendix 1: Numerical values & comparisons

### Area of Korean peninsula

<b>Total</b>	<b>219,020 km<sup>2</sup></b>	<b>84,564 mi<sup>2</sup></b>	<b>100%</b>
North Korea	120,540 km <sup>2</sup>	46,540 mi <sup>2</sup>	55%
South Korea	98,480 km <sup>2</sup>	38,023 mi <sup>2</sup>	45%
DMZ	ca 984 km <sup>2</sup>	ca 380 mi <sup>2</sup>	0.45%
Protected on peninsula	6,571 km <sup>2</sup>	2,537 mi <sup>2</sup>	3%
Minimum to be protected	26,282 km <sup>2</sup>	10,147 mi <sup>2</sup>	12%

### Population (2008) of Korean peninsula

<b>Total</b>	<b>73,086,000</b>	<b>100%</b>	<b>334/km<sup>2</sup></b>	<b>864/mi<sup>2</sup></b>	<b>+0.6%/yr</b>
North Korea	24,479,000	33%	203/km <sup>2</sup>	526/mi <sup>2</sup>	+0.9%/yr
South Korea	48,607,000	67%	494/km <sup>2</sup>	1,278/mi <sup>2</sup>	+0.5%/yr

### Miscellaneous areas

New York State	141,080 km <sup>2</sup>	54,471 mi <sup>2</sup>
New York City	790 km <sup>2</sup>	305 mi <sup>2</sup>
Adirondack State Park	10,930 km <sup>2</sup>	4,220 mi <sup>2</sup>
New Jersey	22,590 km <sup>2</sup>	8,722 mi <sup>2</sup>
New England (6 states)	186,472 km <sup>2</sup>	71,997 mi <sup>2</sup>
Vermont	24,903 km <sup>2</sup>	9,615 mi <sup>2</sup>

### Miscellaneous populations (2008)

New York State	19,490,000	138/km <sup>2</sup>	358/mi <sup>2</sup>
New England (6 states)	14,303,000	77/km <sup>2</sup>	199/mi <sup>2</sup>
Vermont	621,000	25/km <sup>2</sup>	65/mi <sup>2</sup>

## Appendix 2: Known imperilled DMZ Wildlife

### Birds

Crane, Hooded (*Grus monacha*) — IUCN Vulnerable  
Crane, Red-crowned (or Manchurian) (*Grus japonensis*) — IUCN Endangered  
Crane, White-naped (or Grey) (*Grus vipio*) — IUCN Vulnerable  
Eagle, Imperial (*Aquila heliaca*) — IUCN Vulnerable  
Eagle, Steller's sea (*Haliaeetus pelagicus*) — IUCN Vulnerable  
Egret, Chinese (*Egretta eulophotes*) — IUCN Vulnerable  
Goose, Swan (*Anser cygnoides*) — IUCN Vulnerable  
Grassbird, Marsh (*Locustella [= Megalurus] pryeri*) — IUCN Vulnerable  
Grasshopper-warbler, Pleske's (*Locustella pleskei*) — IUCN Vulnerable  
Greenshank, Nordmann's (*Tringa guttifer*) — IUCN Endangered  
Gull, Chinese black-headed (*Larus saundersi*) — IUCN Vulnerable  
Ibis, Crested (*Nipponia nippon*), **if** any in the DMZ — IUCN Endangered  
Sandpiper, Spoon-billed (*Eurynorhynchus pygmeus*) — IUCN Critically Endangered  
Spoonbill, Black-faced (*Platalea minor*) — IUCN Endangered  
Stork, Oriental (*Ciconia boyciana*) — IUCN Endangered

[These **14** or **15** birds represent 48% or 52% of the 29 known imperilled bird species on the Korean peninsula.]

### Mammals

Bear, Himalayan black (*Ursus thibetanus*), **if** any in the DMZ — IUCN Vulnerable  
Deer, Chinese water (*Hydropotes enermis*) — IUCN Vulnerable  
Deer, Siberian musk (*Moschus moschiferus*) — IUCN Vulnerable  
Tiger (*Panthera tigris*), **if** any in the DMZ — IUCN Endangered

[These **2** to **4** mammals represent 33% to 67% of the 6 known imperilled mammal species on the Korean peninsula.]

### **Notes:**

- (a) Imperilled species on the Korean peninsula, not known to inhabit the DMZ, include:  
14 birds, 2 terrestrial mammals, 1 salamander, 1 dragonfly, 4 marine fish, 6 marine mammals, and 1 net coral (but no plants):  
For a grand total of 19 DMZ + 18 other terrestrial + 11 marine = 48
- (b) IUCN 2009 threat data used (Extinct, Extinct in the Wild, Critically Endangered, Endangered, and Vulnerable) from: [www.iucnredlist.org](http://www.iucnredlist.org) (accessed 19 June 2009)
- (c) Presence in DMZ primarily from: Kim K.-G. & Cho D.-G. (May 2005) *Landscape & Ecological Engineering* (Tokyo) 1(1):12.

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