

Building on Baekdudaegan

Peacemaking through Ecological Restoration

By Peter Hayes

Amid the well-known issues that divide North and South Korea, and the potential pathways to lasting reconciliation, there is a little-known concept shared by both sides that taps deep into the cultural resonances of the peninsula's geography and ecological biodiversity. It is called the Baekdudaegan.

Could this concept provide the basis for a shared future that could even involve the rest of Northeast Asia? Peter Hayes lays out the possibilities.

EVERY SOCIETY has a unique cultural prism through which it views the ecological basis of its existence. Such constructs serve both as an organizing principle for environmental management and as a mythic basis for cultural identity. Korea offers the world its little-known concept of the *Baekdudaegan*, which has particular salience at a time of geopolitical and geoeconomic transformation of Korea's external environment, concurrent with upheavals in the domestic political economies of both Koreas.

This concept of Baekdudaegan is introspectively Korean in nature, but in practice it invites adjoining countries—and all linked to the Korean Peninsula by animal and plant migration, atmospheric and oceanic circulation, flow of materials and energy, and provision of critical environmental services—to join Koreans in realizing the Baekdudaegan, conceived as the preservation, restoration and rational use of environmental resources on the peninsula, Korean-style. As this essay explains, due to geographic proximity and ecological interconnectedness, including the quality of air, this project is necessarily inter-Korean, but also regional and even global in nature.

THE BAEKDUDAEGAN

The Korean concept of the Baekdudaegan refers to the contiguous line of about 487 mountains and hills that run 1,400 kilometers from Mount



Baekdu in the far north to Jiri Mountain in the south. It is the central axis, or backbone, of Korea viewed as a crouching tiger, with Mt. Baekdu as the head, and integrates both the mountain systems and the streams and rivers, with a continuous ridgeline connecting Korea as a whole. It forms the organizing principle of a habitat based on watersheds aligned with local culture, which is now under immense pressure from geopolitical and geoeconomic forces.

In South Korea, this domain is already incorporated into nine national and provincial parks across six provinces, and South Korea promulgated its Act on Protection of Baekdudaegan Mountains, passed in 2003, to preserve the biodiversity in this mountain-stream system. The Baekdudaegan Mountains System Protected Area, designated in 2005, covers only the South Korean part of the system, incorporating 260,000 hectares and including historical temples and natural monuments that represent Korean forest culture.

In effect, limited biodiversity corridors have been created in South Korea that are coterminous with cultural spheres and local identities that align historically with watersheds and rivers, providing continuity of past with present in spatial form. This South Korean system already intersects with the relatively protected Demilitarized Zone (DMZ) and could incorporate the long-proposed DMZ Peace Park as an east-west axis, or the “waist,” of a peninsula-wide biodiversity system as well as the feeder ridges, tributaries and watersheds.

NORTH KOREAN BIODIVERSITY AND A KOREAN CORRIDOR

Surprisingly to many Western observers, North Korea provided substantial information concerning biodiversity in the country as it responded to disastrous floods after signing the Biodiversity Convention in 1994, with Global Environment

Facility support. In 1998, North Korea produced its first National Biodiversity Strategy and Action Plan and filed its first national report to the convention secretariat the same year.

In 2002, it compiled the North Korean *Red Data Book (Animals)*; in 2003, it filed the *State of the Environment, DPR Korea*; in 2004, it published the proceedings of the National Workshop on the Preservation and Use of the Genetic Resources of Plants and promulgated the National Biosafety Framework; and in 2005, it produced the North Korean *Red Data Book (Plants)*.

In 2005, it also filed the *Third National Report (DPR of Korea)* which lists endangered species, and provides a detailed list of nature conservation areas in North Korea, which account for about 5.6 percent of total land area. In addition to establishing biodiversity protection areas in specific high value areas, especially around renowned mountains, the North Korean report states that the Ministry of Land and Environment Protection is striving to establish a system of nature protection areas, which would enable the government to consider the network of ecological resources and related needs to connect them — as occurred in 1994-1998 in South Korea. The North Korean system of declared nature reserves covers over half a million hectares, although the status of these reserves today is unknown.

Unfortunately, much of North Korea's surviving biodiversity is under assault due to the desperate extraction of fuel, food, and medicinal biota by starving rural North Koreans; land use conversion into agriculture; the failure of reforestation in much of North Korea due to poor reforestation practices and shortages of materials combined with acid rain and other environmental problems affecting the forests; unregulated trade in endangered species that are valuable for export; and failure to enforce existing nature reserves and parks already promulgated by North Korea.

Ultimately, realizing ecological security requires humans to co-operate. That requires them to shift their identity to recognize their interdependence on natural systems and those who sustain them beyond the boundaries of their community and the borders of their state.

Conversely, the very concentrated pattern of co-locating industry within human settlements has left much of North Korea's high mountain forests in a relatively pristine state, even today. The “H-infrastructure” rehabilitation plan envisioned by South Korea for North Korea in full-scale rapprochement would potentially obliterate many of the biodiverse areas that have survived in North Korea, if implemented blindly following engineering and economic logic, without regard to long-term sustainability and the cultural viability of Korean society.

NORTHEAST ASIAN BIODIVERSITY CORRIDOR

If these two nascent biodiversity corridors were extended via the North Korean land bridge from South Korea into contiguous parts of China and the Russian Far East, it could become the core of a Northeast Asia biodiversity corridor.

An important question is whether a regional corridor should extend to Japan, not only because important migratory bird species fly from Japan to the DMZ and onwards via North Korea to China and the Russian Far East, but because other endangered species of plants and animals that need restoration elsewhere in the region might be sourced from isolated populations or seed stock in Japan. Moreover, Japan already participates strongly in other regional environmental fora and provides funding and technological support for many of the region's co-operative environmental programs at many levels, including national, provincial cross-border, and city-city co-operative projects with South Korea, China and Russia.

A related question is whether the corridor should be further extended from Japan to the Kuril Islands and/or Sakhalin Island in Russia. Thus, eventually the corridor might extend all the way around the East Sea of Korea/Sea of Japan.

To design a Korean and regional biodiversity corridor will take much communication, co-operation and collaboration between the two Koreas and external parties with a stake in ecological integrity in Korea. The ultimate goal of a biodiversity corridor, as Ahmed Djoghla of the Biological Diversity Convention Secretariat puts it, is to “connect ecosystems and populations of species that are threatened by fragmented habitats, facilitating genetic exchange between different populations and thus increasing the chances of survival of threatened species” — that is, to preserve the genetic diversity that supports habitats capable of maintaining human populations indefinitely.

In general, a functioning biodiversity corridor designates core areas where the conservation of biodiversity takes primary importance, even if the area is not legally protected. The delineation help preserve vital ecological or environmental connections by maintaining physical (though not necessarily linear) linkages between the core areas. In addition buffer zones, which protect the network from potentially damaging external influences and which are essentially transitional areas characterized by compatible land uses are put in place along with sustainable-use areas, where opportunities are exploited within the landscape mosaic for the sustainable use of natural resources together with maintenance of most ecosystem services.

The ultimate result is to link sites that maintain or restore a degree of coherence in fragmented ecosystems in order to increase species viability. This effect is achieved by giving animals access to more habitat for foraging or hunting, reproductive activity, dispersal of juveniles, or re-colonization of vacated or unoccupied areas. The corridors also facilitate migrations and improve the gene pool by permitting genetic exchange between populations. The creation of corridors

may also support species with specific needs, for example, for fire required by some species to sprout from seeds, or for flooding needed by other species to reproduce and propagate.

In addition to the DMZ and the mountain range-forest-rivers of the Korean Baekdudaegan framework, other essential elements of a regional or Northeast Asian biodiversity corridor already exist and have been explored systematically.

In the northern area where the peninsula merges with China and the Russian Far East along the Tumen River, a number of foundational elements have been laid by pioneering organizations at the national and international level.

These include species corridors in the Russian Far East, China and North Korea; the missing land-bridge components in North Korea itself; and the Baekdudaegan ecosystem network in South Korea. To the west and to the south lie the biodiversity reserves of the Amur-Hanchun region, which could also link to a Northeast Asian corridor.

PRECEDENTS AND MODELS FOR NORTHEAST ASIA

A number of multinational biodiversity corridors already exist, some located in and around conflict zones such as the Israeli-Jordanian border. Perhaps the most salient to the Korean Peninsula and to Northeast Asia is the Mesoamerican Biological Corridor (MBC), which involves eight Central American countries.

The MBC involves all seven Central American countries plus Mexico in an effort to link fragmented ecosystems and habitats, and to address the social and economic problems arising from environmental degradation. The MBC exists in a context in which there are disputed borders or active conflicts in border regions (Costa Rica-Nicaragua, Guatemala-Mexico-Belize, and Nicaragua-Honduras). It evolved from a non-govern-

FIGURE 2 THE MESOAMERICAN BIOLOGICAL CORRIDOR

Source: Central American Commission on the Environment and Development



mental grouping called Paseo Pantera (“Path of the Panther”), appealing to the iconic power of a symbolic mega-species in all the region’s cultures.

Although the origins of the MBC stretch back to 1991, it really began in 2000 with funding from the UN Development Program, the Global Environment Facility, and the German Technical Co-operation Agency. At the time, social and economic development considerations were integrated into the MBC, and poverty alleviation became a central concern.

The MBC process generated a Regional Strategy for Biodiversity which is supported by three regional programs of the Central American Commission for Environment and Development. These are focused on protected areas management, connectivity, and biodiversity monitoring.

In 2006, the second phase of implementation of the MBC began with a focus on 10 trans-boundary, bi — or multinational biodiversity corridors within the regional framework.

A number of these biodiversity corridors are located in areas of direct inter-state conflict. They also present difficult asymmetries of interest and capacity. In some cases, stakeholders (such as indigenous communities) may be locked out of nature preserves that have long been their source of sustainable livelihood. They receive mostly costs and few benefits from resource extraction or exploitation in these regions. Each country has different legal and institutional practices, which makes co-ordination of policies and implementation slow and difficult to achieve.

Nonetheless, the MBC represents a remarka-



The muddy waters of the Yellow River merge with the Bohai Sea in Shandong province. The phenomenon occurs annually between July and October as China's second longest river floods. Photo courtesy of Shandong Provincial Department of Culture and Tourism

ble achievement in a short period and portends further progress in the near future. The differences between Korea/Northeast Asia and this region are obvious. Yet, the number of states (eight versus 46), diversity of culture and size, existence of serious inter-state and domestic conflicts, and the combination of mountainous terrain and fragmenting habitat on a land bridge surrounded by ocean has parallels with the Korean Peninsula in Northeast Asia that are worth close comparative study.

BIODIVERSITY CORRIDORS AND PEACEMAKING

Reforestation is a critical aspect of ecological restoration needed to realize the Baekdudaegan vision. South Korea has long been the primary driver of a regional effort to promote forestry in the form of the Northeast Asian Forest Forum (NEAFF), established in 1998. Originating in reforestation efforts in South Korea, the NEAFF became a vehicle for connecting forestry

networks in Mongolia (MOFF) and China (CFF), led by partner entities from the Institute of Geology of Mongolia and Beijing Forestry University, respectively. At times, this network was able to undertake small-scale, collaborative reforestation projects in North Korea itself via non-governmental organizations such as Forests for Peace.

Because North Korea relies heavily on biomass — mostly wood-fuel and charcoal obtained from its dwindling forests — both for rural energy supplies and even for fuels due to international sanctions, the task of resuming co-operative reforestation is urgent.

Restoring ecological security in Korea and the Northeast Asian region will take time. After all, the region has been subject to centuries of ecological abuse, especially in the period of colonization and two major wars in the 20th century, and the impact of unregulated industrial and urban development. To these abuses must be added the legacy of the Korean War combined with the ongoing, relentless preparations for war, not only

on the Korean DMZ, but as a result of the land use practices resulting from the heavy industrialization pathways taken by both Koreas.

Ultimately, realizing ecological security requires humans to co-operate. That, in turn, requires them to shift their identity to recognize their interdependence on natural systems and those who sustain them beyond the boundaries of their community and the borders of their state.

For this reason, building ecological security is even more challenging than creating a condition of nuclear insecurity, because it must involve not only the political-military leadership but all sectors of society, and also must achieve cross-generational stewardship. It requires political leadership of the highest caliber at national and international levels.

Given the strategic competition between states in this region, only South Korea is in a position to initiate a regional biodiversity corridor. It has the most at stake, in that it is steward of the southern half of the land bridge and DMZ that constitutes the Baekdudaegan, and directly or indirectly will meet the bulk of the costs of realizing ecological security in North Korea.

It is also positioned best to convene regional technical and scientific working groups to ascertain the origins of and strategies to mitigate and adapt to global, regional and inter-Korean atmospheric pollution that links desertification and pollutant-laden dust and acid rain to the impacts on habitat, especially efforts to reforest in and around biodiversity corridors, and to ameliorate and adapt to climate change. Korea, being surrounded by a huge oceanic thermal mass, is highly vulnerable to the effects of climate change and increasing super-strong storms as well as sea-level rise, the effects of which are already seen in flooding, forest-fire and transboundary smoke, and urban heat island effects on both sides of the DMZ.

Similarly, the terrestrial Baekdudaegan-based biodiversity corridor traversing the peninsular must be supplemented by a coastal “blue zone” that manages oceanic resources on a sustainable basis, especially fishing activity already confronted by a shift from valuable pelagic fish stocks to ones dominated by less valuable fish comfortable with living in the rapidly warming waters of the east and west coasts of Korea. However, this agenda too must be orchestrated on a regional and global basis. China's Yellow river, for example, loads the Yellow Sea with immense amounts of land-based pollution, in turn pushing Chinese fishing vessels into Korean waters along the contested northern limit line, complicating an already difficult inter-Korean limited arms control scheme for this area under the 2018 Agreement on the Implementation of the Historic Panmunjom Declaration in the Military Domain.

At this stage, South Koreans should work directly wherever possible with North Korean counterparts, or in conjunction with regional and international agencies, to build the networks of scientists and land-use managers to commence the hard work of compiling ecological assets, mapping biodiversity resources, and envisioning how environmental networks could be established with a view to achieving biodiversity connectivity on a regional basis.

But we should not wait for the big actors to start to move. Networks of individuals and small civil society organizations can make important inroads by creating a mosaic of micro-habitat conservation projects that preserve biodiversity locally while waiting for policy-makers to establish large-area cores and nodes in national and regional corridors.

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