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**The Crane in A Pine Tree: The State of Wetlands In Korea.**

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Any visitor to Korea will sooner or later come across an artistic image of a bird: a snow white Red Crowned Crane typically standing atop a gnarled and black pine tree. It is an image to be found frozen in paintings hung on walls, on lacquer ware, even wrapped around more ornate chopsticks throughout the country. Not only just in Korea, but in China, and in Japan too, where the crane alone, this time in red, even adorns the planes of the national carrier JAL. Why did it come to be there? What does it mean? Sometimes, it is considered that the bird and the tree represent light and dark, or male and female characteristics; certainly they are both known to be symbols of long- life: those that look upon the crane, it is still widely said, shall live a century or more.

But why a crane, and its rather odd complement, a tree? The answers to these questions perhaps can offer an insight into the deepest and most meaningful of relationships: bird and environment, human and nature, and how each is joined.

For the Red Crowned Crane Grus iaponenis is a bird not of forest but of wetlands. Though always confined to northeast Asia, it was once considerably more widespread, found in extensive river flood plains and in coastal marshes throughout the region, stalking elegantly through wet grasses and shallows to feed on fish, frogs, crabs and the roots of a variety of aquatic plants. Before conversion of much of the natural landscape, it would have been at once perhaps the most striking and the most familiar of birds across all the lowland river plains of Korea the Kimpo Plain formed by the Han and Imjin Rivers, the Pyongtaek and Yedang Plains, The Honam Plain[page 60] of the Kum, the Naju Plain formed by the Yeongsan River and the vast Kimhae Plain merging into the delta of the Nakdong River. In a land of mountain and dry forest, of dusty, dark pine and bare crag, what a vital contrast such floodplains and wetlands must have made a tapestry of greens and yellow browns, with quicksilver ribbons of waterways and pools.

And in amongst this green and silvery expanse, white points of light: the cranes. For peoples of an earlier time and culture, dependent upon the natural resources close to them for their very survival, the space where the dry forested mountain slopes met the flat and open wetland must have offered the very best of two seemingly opposite worlds-dry land for living on, with its shelter, building materials, firewood, and the wetlands with their food and clean water-all things necessary for life, for a long life. The Crane and the Pine were surely the most eloquent and enduring indicators, the simplest twin symbols, of the optimal conditions for human life. Highly- evolved and specialized, long-legged and billed, massive winged and shy, the Red Crowned Crane is always associated with extensive wetland areas. Never perching in the trees with which it is so often depicted, it instead nests on mounds of vegetation on the ground in remote bogs and open reedbeds; roosts in shallow rivers or low islands; and feeds in the same wet areas, safe from predators such as wolves and more recently people. Common only one or two centuries ago throughout the lowlands of the Far East, its population now numbers a mere two thousand: with 600 to 800 in eastern China, 600 in Japan and between 500 and 650 in Korea (1). A relic population of a once much more numerous species, it is now classified as Endangered because it has a very small, declining population as a result of loss and degradation of wetlands through conversion to agriculture and industrial development. (2). Though all know the name and the outline of the bird, few people these days have ever seen one for real, often confusing them instead with the much more abundant Little and Great Egrets that to a larger extent tolerate the noise and filth of our urban rivers and concrete sea fronts. [page 61]

Not seeing, who remains to embrace their ancestors’ vision of the Crane in a Pine Tree?

In recent decades, the majority of the Korean Red Crowned Cranes migrate here from their vast Amur breeding grounds, to spend the winter largely confined, and protected, behind the barbed wire and fences of that narrow strip of regenerating nature, the 4-km wide DMZ, congregating in extensive and undisturbed rice paddy and shallow rivers in the Cheorwon Basin. A few more make it each year to the extensive tidal-flats and salt- marsh that flow outwards in evolutionary slow motion from the Han and Imjin Rivers-wet land crawling out a millimeter at a time over centuries towards the open sea. At Kanghwa and on the northern edge of Yeongjong 148 Red-crowned Cranes remain, their once remote habitat increasingly squeezed and ringed with roads, over-flown by planes and crowded out by people wishing to escape the confines of the city. An even smaller group, a single family, at least in 2000 and 2001, has reached as far south as the Mangyeung and Dongjin estuaries-now made famous as being the rivers of the Saemangeum area, the world’s largest intertidal reclamation project.

It is no coincidence that the remaining cranes winter at these sites. Sites that can sustain the cranes de facto must also be able to support an abundance of other life, for they are large birds, requiring large amounts of food. The wetlands that support these symbols of long-life also therefore must be able to support a wide range of other animals and plants consumed by the birds, and a seemingly infinitely expansive web of interrelated consumers, and producers, from microbe-rich soils to swarms of life more easily visible to the human eye. Along each strand of that web, other lesser- known but equally threatened wetland plants and animals: birds such as the Black-faced Spoonbill Platelea minor, with a world population of only 850，the once numerous Chinese Egret Egretta eulophotes now reduced to ca. 2000 in number and the Saunder’s Gull Larus saundersi, a crab-eating [page 62] specialist of tidal-flats, that throughout its global breeding range (the Yellow Sea) now totals only 7000 individuals. The Cheorwon basin, Ganghwa, northern Yeongjong, the free flowing estuaries of the Mangyeung and Dongjin, comprise 4 out of only approximately 65 wetlands in South Korea that still support internationally important concentrations of waterbirds (3), that still support a semblance of the abundant life that once must have been much more typical.

So what of the state and importance of Korean wetlands now? Before considering their present condition, there is the need to recall what used to be, to remember the time when the crane was widespread, back before a time when people used to moan that they could not sleep at night for the deafening clamour of geese, before the time too when the comical gulping song of the Watercock, the Tumbugi, came to symbolise the sound and feeling of the home village when loved ones become separated.

Back approximately 10, 000 years ago, a mere 100 centuries of time, when the melting of enormous continental ice sheets caused the sea to rise again, submerging the shallow ancient flood plain of the great rivers of China and Korea; when low hills and headlands became islands, and the present coastal outline of the Korean peninsula, with its numerous indentations and islands was formed. From that time on, melt-water and rains have continued flowing into this shallow sea, the West or Yellow Sea, depositing eroded soils and the leaf litter of ten thousand autumns, creating expansive areas of organically- rich mud and sandy estuaries and tidal flats. As now, summer monsoon rains in some years caused rivers to swell and break their banks, inundating low lying land, creating pools, ponds and in the deepest and widest hollows, lakes. With each flood, the dry land grasses and weeds and young trees were submerged, and with their rotting and death a release of nutrients that could feed the whole cycle of life carried downstream by the river: a floodplain- derived pulse of nutrients and energy moving along the river out into the[page 63] estuaries and beyond where it could sustain the most enormous concentrations of life. Each river, each floodplain, each rivermouth, each tidal-flat supported a range of specialised species at optimal densities.

As these summer floods slowly subsided, Red Crowned Cranes competed with Oriental White Storks Ciconia boyciana, White Spoonbills Platelea leucorodia and the pink-flushed Crested Ibis Nioponia niopon in shallow pools for frogs and fish, carrying on their legs and body- feathers the eggs of those species which they consumed, allowing them to spread into areas ever further removed from the river. As summer shifted further into autumn, geese and ducks which had bred in the uninhabited taiga and tundra, including the Taegul faced Baikal Teal Anas formosa, swarmed south into Korea, to graze the marsh edges for the seeds or roots of abundant water plants, while in the estuaries, all estuaries, Black faced Spoonbills, and Saunders Gulls and a whole host of migrant shorebirds, crowded the surface of the mud. With each season’s cycle, the shorebirds as now, made their way between their Siberian and Arctic nesting sites and their wintering grounds in Australasia and southeast Asia, and then the following spring, back north again: an enormous and energy demanding ebb and flow of migration, repeated endlessly over thousands of years, ever dependent upon a sure supply of abundant food at every staging site to sustain them.

We can only guess at the numbers of such species at that time, but looking across the Pacific to the Americas, even now we can witness the same migration undertaken by tens of millions of shorebirds. In East Asia, at the beginning of the eleventh millennium, we are left with only 4 million migratory shorebirds, and more threatened species of waterbird than any other flyway in the world (4).

In Korea, the causes for these declines are clear. An increasing population， the shift from living within the resource to living within cities, the[page 64] intensification of agriculture, the growth of industry, all have put increasing demands on the natural wetland systems. Although conversion of wetland into farmland had been practiced since the Koryo Dynasty such projects were generally small scale. Even during the 1800s the Red Crowned Crane and the Oriental White Stork were considered locally common (2). Through the 1900s, however, the speed of change accelerated rapidly.

Occupation of the peninsula by a militarized Japan led to widespread hunting with guns, wiping out mammals and the larger waterbirds from all but the more inaccessible wetlands. There was savage exploitation of not only people, but also of the natural resource, to fuel Japan’s rapid industrialisation and decades of war. Forests were cut, altering flood regimes and smothering clear waters with muds and sands. Inland, whole floodplains were drained, and converted to rice for export, while salt marshes and some 40, 000 ha of tidal flats were also impounded for human use (6), including much of the massive delta which used to be formed by the Geum, Mangeyung and Dongjin rivers.

By the 1950s，when Korea regained its independence, many species were already in steep decline, and the Crested Ibis was all but lost. With the need to feed a desperately hungry people the national priority was of course food self-sufficiency: substituting the natural for the tamed, the tidal-flat edge for the rice-field. Through the 1960s and 1970s, the resultant reclamation and massive growth of the domestic pesticide industry led both to increasing rice fields, but also to the poisoning of rivers, the sterilisation of soils, and a severe decline in some commercial fisheries (7). In consequence, the Oriental White Stork disappeared as a breeding bird in the 1970s (2), while many other species of insect and aquatic animal-eating bird declined enormously, including the once-ubiquitous Watercock. The 1980s and 1990s brought even more change: in the mid-1980s, the then military government decided upon a National Master Plan for land use, which included targeting [page 65] about 90% of all tidal flats and coastal shallows for reclamation (5). As part of this plan, more than 30% of all remaining tidal flat has already been or is presently undergoing reclamation. Several of the major rivers were barraged too, forming huge reclamation lakes intended for agriculture, with sluice gates only to be opened during major rain events to prevent flooding. The very real consequences of this poor design include both the halting of migratory fish movements, and of the life-giving floodplain nutrient pulse. Results include eutrophic and often unusable reclamation lakes at e.g. Shihwa and in Haenamgun; a sudden toxic flush of released reservoir water if the sluice gates are opened, with the associated red tides further limiting fish and bird populations; and an end to the gentle merging of salt and freshwater that creates the extensive and muddy brackish zones in estuaries: rather now abrupt shifts from marine water to fresh and back again The overall consequence: massive declines in brackish zone and estuarine specialist species, including many species of shorebirds and the mud dwelling animals that they feed on. And as each web of life is interwoven, the demise of estuaries, where many species of fish lay their eggs, has been followed by the demise of fisheries, as predictably as day is followed by night, summer by winter.

Recognising the loss and degradation of wetlands worldwide and harnessing the wisdom of past generations, the Ramsar “Wise use of wetlands” Convention (Iran, 1971) developed a series of guidelines for identifying the world’s most important remaining wetlands, some of which look to the presence or absence of birds as indicators of such wetlands- character, health, and value. Using these criteria, approximately 65 wetlands in South Korea can still be considered internationally important for waterbirds, defined in accordance with the guidelines as being able to support concentrations of 20,000 individual waterbirds or more, or of 1 % or more of a waterbird species-suspected minimum population (8). Although South Korea has acceded to the convention, most of our 65 internationally[page 66] important wetlands, including the Yellow Sea’s single most important site for shorebirds, Saemangeum (9) are still threatened with complete or partial reclamation or degradation. Even officially “protected” sites such as Woopo Ramsar site and the Nakdong estuary are increasingly being ringed by roads, drained, and reclaimed at rates unimagined by our ancestors.

Within the lifetime of the leaders of Korea, once widespread species have all but disappeared, while several others have become extinct as breeding birds. We have lost the Oriental White Stork, said to herald the birth of children; we have all but silenced the Watercock; we have replaced the sounds of geese with those of cars and building sites; and even the once abundant Barn Swallow Hirundo rustica or Chebi seems to be only a name to most city children. The decline in these birds indicates the decline of the species they feed upon; the loss of the ecosystems in which they and we evolved; the loss of nature’s great productivity, relied upon not only by birds, but by people too for our very survival.

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For more information on wetlands and birds in South Korea and neighboring countries: http://www. wbkenglish. com

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