The Black-faced Spoonbill (*Platalea minor*)

DESCRIPTION

Black-faced Spoonbills are long-legged, long-necked wading birds that resemble egrets. Their elegant feathers are snow white most of the year, but develop a shaggy, golden-yellow crest and breast patch in the summer breeding season. Their legs, feet and toes are jet-black; faces are black and bare around the eyes and across the forehead. Their black, elongated beaks gradually narrow, then abruptly flare out into a flattened disk with a nail at the tip.

FACTS

Worldwide status:
Endangered
Class:
Aves
Order:
Ciconiiformes
Family:
Threskiornithidae
Subfamily:
Plataleinae
Genus / Species:
Platalea minor
Estimated Population:
2,300

CHARACTERISTICS

Length: 27-29 in (70-75 cm)
Weight: Unknown
Clutch size: 3-5 eggs
Incubation: 21-25 days
Diet: Small fishes, crustaceans, insects, mollusks, occasional plant material
Habitat: Wetlands, marine estuaries
Range: Spoonbills breed in North and South Korea, China and Russia; and migrate to winter in Japan, Taiwan, Hong Kong, Vietnam, and the Philippines.

CURRENT STATUS

Black-faced Spoonbills are the rarest, and least-studied, spoonbills in the world. They have a global population of around 2,000. These birds nest on cliffs with gulls and other seabirds. The only known breeding colonies are on a few small, rocky islands off the coast of the Demilitarized Zone between North and South Korea and China; in the adjacent province of Liaoning in China; and at Furugelm Island (Russia).

The Facts

Photo: Jeju Wildlife Research Centre, 2008

Map of South Korea with Incheon City inset

Black-faced Spoonbill nesting site

The Plight of the Black-faced Spoonbills in South Korea

- A proposed development in Incheon City, South Korea, threatens one of the last remaining pieces of habitat for the endangered Black-faced Spoonbill (*Platalea minor*) and other tidal bird species.
- Known as the Incheon Free Economic Zone (IFEZ), which includes the Songdo International Business District (IBD), the project is being celebrated as an exemplar of ecologically conscious design, its "green" image galvanized by a massive marketing campaign.
- Through this project, South Korea is violating its own environmental regulations and pledges to preserve wetlands.
- Numerous highly-regarded compaines from the United States and other nations, as well as 14 US universities, are involved in the Songdo project.
- The Black-faced Spoonbill, found in North and South Korea, Japan, coastal China, Taiwan, the Philippines, Vietnam, and Russia, is the most endangered Spoonbill in the world, with a population of around 2,346 in 2010.
- The Songdo IBD is one of many planned commercial and industrial developments throughout South Korea that is destroying the spoonbill's native tidal wetland habitat and thereby pushing it toward extinction.
- The Four-Rivers Restoration Project, also billed as part of South Korea's "Green Revolution," further threatens waterway and tidal wetland ecosystems.
- The Four-Rivers Restoration Project entails building 16 new dams, rebuilding 87 old dams, and dredging 570 million cubic meters of sediment from 428 river miles. This will decimate riparian and wetland ecosystems throughout the country.
- Alternative strategies such as ecotourism would protect the Black-faced Spoonbill and preserve tidal wetland ecosystems while providing economic and ecological benefits to South Korea.
- Active steps must be taken to stop the destruction of tidal wetland habitat in South Korea and initiate a truly Green Revolution.

"Eco-City" Threatens the Black-faced Spoonbill

Location of the Incheon Free Economic Zone (IFEZ)

LOGISTICS

Asia's Smart Metropolis

South Korea's Songdo and China's Meixi Lake are spending billions on citywide intelligent networks with an eco-vibe. By Elizabeth Woyke

JOHN B. HYNES III GOT THE JITTERS when he first spied the mudflats of Songdo, South Korea in June 2001. How would he transform the expanse of muck into a smart urban center with an integrated network of utility, transportation, real estate and recreation systems?

Eight years and 82 globe-crossing flights later, Hynes is far more assured about Songdo's prospects. The man-made island, 40 miles southwest of Seoul, is now dotted with 100 buildings, including a 7,800-person apartment complex, a massive convention center and a Sheraton hotel.

Hynes' employer, New York real estate developer Gale International, estimates that 40% of the 1,500-acre city is under way. Completion is slated for 2014. The cost: $35 billion.

Songdo's backers, which include Gale, Morgan Stanley and Korean steelmaker Posco, are betting the city can become a northeast Asia trade hub, linking nearby Shanghai and Tokyo. It will also be a model for a new Gale project, Meixi Lake, to be built in China's Hunan Province starting later this year. Both cities will be "smart, sustainable and technologically ambitious," says company Chairman Stanley C. Gale.

A network of underground pneumatic pipes will move solid waste, reducing the need for garbage trucks. A citywide bike rental service and plenty of biking paths are part of a green transportation system. With its 40% green space, including a $220 million park, Songdo is designed to feel as airy as Vancouver.

Key to Songdo and Meixi Lake are data networks developed by Cisco. Cisco plans to deliver video networking technology and energy management software tools to all Songdo residents. "All our expertise is coming together in Songdo," says Wim Elfrink, Cisco's chief globalization officer.

It's hardly been a smooth path. Permit delays pushed the opening of Songdo's flagship commercial building, the $500 million Northeast Asia Trade Tower, from December to late summer 2010.

Hynes says Gale won't see a return on its billions for two to three years. First he has to finish covering the mudflats. ₣

62 FORBES SEPTEMBER 21, 2009

Coverage of Songdo has been overwhelmingly positive, with little critique, such as this Forbes article, September 21, 2009

The reality of land reclamation is its devastating effect on habitat areas for many species. Photo: Tim Edelsten, 2003

The Incheon Free Economic Zone and Songdo International Business District, under construction now, threaten the survival of the endangered Black-faced Spoonbill. South Korea's current economic expansion is generating an explosion in development, and the planned district near Incheon City has been advertised as a model of sustainable design. Contrary to its "green" image, the development is destroying critical wetland habitat.

The wetlands in the Songdo tidal flat are an important stopping ground for many migratory aquatic bird species, including the endangered Black-faced Spoonbill. In 2006, 58 spoonbills were recorded in the Songdo tidal flat. Several pairs of Black-faced Spoonbills -- eight in 2009, but more than twice that number in 2010 -- nested on an artificial island in an industrial-drainage pond near the planned development. South Korea has launched an extensive Public Relations campaign to sell Songdo as an exemplar of green design, but no architecture, no matter how "green," can undo the irrevocable damage to the ecosystem. Filling this remaining wetland habitat is planned for 2010, but destruction of the already deteriorated habitat will devastate this desperate spoonbill population.

If the current development proceeds as planned, South Korea will violate its own environmental regulations and its own pledges to preserve existing spoonbill habitat. According to Birds Korea, a South Korean environmental organization, almost all of South Korea's remaining wetlands are threatened by development and these critical habitats are the last refuge for many wetland dependent species. Although spoonbills are legally protected in South Korea as well as many other Asian countries, the Songdo project reveals that South Korea's so-called "Green Revolution" prioritizes short-term profit over a sustainable economy and ecology.

"Eco-City" Threatens the Black-faced Spoonbill

Large swaths of green in this rendering by Gale International disguise the reality of the Songdo project's "open spaces": manufactured "nature" replacing a pre-existing tidal flat. Image: Gale International (www.songdo.com)

Songdo Tidal-flat and Sorae Creek, Photo © http://maps.daum.net

There is still time to prevent this project from wreaking environmental havoc. Changes to the plans for the Songdo IBD and the remaining area of tidal flat ("Section 11") have the potential to retain, or even increase, the economic viability of the development, while saving spoonbill habitat for the benefit of birds and people alike. By preserving its invaluable wetlands and other ecosystems, South Korea has the opportunity to initiate a meaningful Green Revolution.

LEED™ Architecture ≠ A Green Project

Gale International promotes an image of energy-efficient architecture, including drawings as above for the Sheraton Incheon. Image: Gale International (www.songdo.com)

Gale International's greenwashing is apparent in the resource-inefficient use of land, as shown with images of the Jack Nicklaus Golf Course on their website. Image: Gale International (www.songdo.com)

What does it mean to be green?

Gale International, developer of the Songdo IBD, has billed its project as "one of the world's greenest cities" and international media organizations have facilitated their deceptive marketing campaign. Major news outlets including The Wall Street Journal, Forbes and The New York Times have each published articles applauding South Korea's new "green" city. In recent years the terms "green" and "sustainable" emerged as trendy marketing tools—and are increasingly used to sell products that are anything but. What constitutes green and what does it mean for a city to be green?

The US Green Building Council, initiator of the popular LEED system for sustainable architecture, is currently creating a new program, LEED-ND, or LEED Neighborhood Development as a way to promote and certify sustainable urban development. Songdo IBD is listed as a LEED-ND pilot project, earning points for energy efficiency, public transportation and accessible green space—yet the project will destroy critical wetland ecosystems. Though not yet officially certified, Gale International is using the LEED system to market their new city; this obvious green-washing undermines the legitimacy of the LEED system.

Sustainable development should work in harmony with, and benefit from, existing natural systems, and the American Society of Landscape Architects lists habitat preservation among its core criteria for sustainable development. The Songdo development not only destroys critical habitat area but also eliminates the opportunity these areas provide for carbon sequestration, flood control and ecotourism.

These wetland ecosystems are among the most important in the world; without them, fisheries would collapse, coastal flooding and erosion would be worsened and countless species would extinct.

LEED^{tm} Architecture ≠ A Green Project

Design Consultants / Firms:

- Kohn Peterson Fox (KPF)
- Arup
- Kunwon (associate architect with KPF in So. Korea)
- Parsons Brinckerhoff
- HOK
- Studio Daniel Libeskind
- YRG Sustainability Consultants
- The Whitman Strategy Group
- Heerim Architects and Planners
- Moo Young Architects and Engineers
- Baum Architects
- Archiplan Inc. Architects & Planners
- Cosentini Associates
- Thornton Tomasetti Engineers
- Kun Won Architects
- Gansam Partners
- Kling Stubbins Architecture Engineering Planning Interiors
- HAEAHN Architecture
- Dong Il Architects and Engineers

Other Industry Firms:

- 3M Worldwide
- Otis
- GE
- LG
- Microsoft
- United Technologies
- Carrier

U.S. Interests in Incheon, South Korea

Sign promoting the Incheon Free Economic Zone

Photo: Suzie T (flickr.com, 2009)

Photo: gtmcknight (flickr.com, 2006)

Though the construction of the Incheon Free Economic Zone and Songdo IBD is occurring on the other side of the world, many major stakeholders are corporations, contractors, and educational institutions from the United States of America. The main developer, Gale International, is based in New York, and the architecture and urban design teams also include several US firms. Cisco Systems, 3M, GE and Microsoft are involved as technical consultants and contractors. The "Joint University Campus", which will be located over an area of prime spoonbill habitat, is expected to attract fourteen US universities, including Carnegie Mellon, UC Berkeley, USC, NC State, and Georgia Tech.

Many of these partners may be unaware of the severe environmental impact of the project, as the marketing surrounding the enterprise highlights its "green" design and omits its role in destroying one of the last stopping grounds for the black-faced spoonbill and other species.

Nevertheless, these companies are entering a joint venture that would be illegal under US environmental regulations, as US law prohibits any development that threatens a protected species. Though South Korea declared the spoonbill a "National Monument" in 1963, the Songdo IBD disregards the needs of this vulnerable species. By filling vital tidal flats, the proposed development also violates international agreements on wetland habitat protection, such as the Ramsar Convention, signed by both the US and South Korea.

SAVE International is committed to exposing the environmental consequences of the Songdo International Business District and calls upon the organizations involved in its construction to insist on habitat conservation as a top priority, thereby developing a truly sustainable city.

U.S. Interests in Incheon, South Korea

Companies involved in the design and construction:

- Gale International
- Kohn Pederson Fox
- Ove Arup & Partners
- Cisco Systems
- 3M Worldwide
- Dong Il Architects & Engineers
- Jina
- OTIS
- Gansam Partners
- Kling Stubbins
- Parsons Brinckerhoff
- GE
- KPF
- Thornton Tomasetti
- Baum Architects
- Haeahn Architecture
- LG
- United Technologies
- Cosentini
- Heerim architects & planners
- Microsoft
- The Whitman Strategy Group
- Ho+k
- Mooyoung architects & engineers
- YRG sustainability consultants
- Studio Daniel Libeskind
- Carrier
- Kun Won Architects & planners
- USGBC/LEED tm

Korea invited the following U.S. universities to build campuses in Songdo:

- State University of New York at Stony Brook
- North Carolina State University
- University of Missouri
- University of Southern California
- George Mason University
- University of Delaware
- University of California, Berkeley
- Georgia Institute of Technology (Georgia Tech)
- University of Illinois at Urbana-Champaign
- Carnegie Mellon University
- Boston University
- Columbia University
- University of California, San Diego
- University of Florida

Advertisements for the Incheon University Complex such as the one pictured above celebrate green features without acknowledging the project's catastrophic impacts (Image: ifez.go.kr)

Habitat Needs of the Black-faced Spoonbill

Photo: KFEM, ⓒ박종학

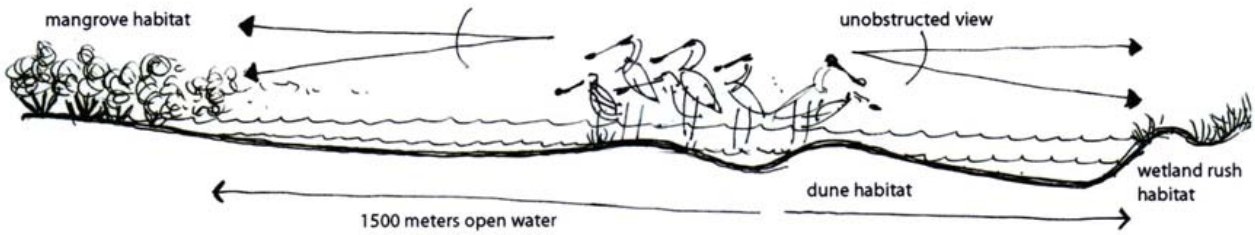
Photo: KFEM, ⓒ박종학

Habitat Needs: Black-faced Spoonbill and Other Wetland Species

Planning for the preservation of the Black-faced Spoonbill and other wetland species requires an understanding of these species' micro-scale needs. The Black-faced Spoonbill feeds and roosts in a particular natural setting that dozens of other wetland and wading species also call home.

Foraging Habitat

Spoonbills feed in the water, consuming a wide variety of foods but preferring small fish. A flock of 100 wintering spoonbills requires a foraging area of 20 km2, composed of mudflats and shallow water, with water depths of 4 to 20 cm. In the summer, spoonbills forage an average of 4 km from their nests, but have been observed foraging as far as 20 km away, in water 6 to 21 cm deep. In winter, the spoonbill's foraging area needs to be within 9 to 14 km of its roosting site, though a healthier population is more likely if the foraging area is within 9 km of and adjacent to the roosting area.



Habitat Needs of the Black-faced Spoonbill

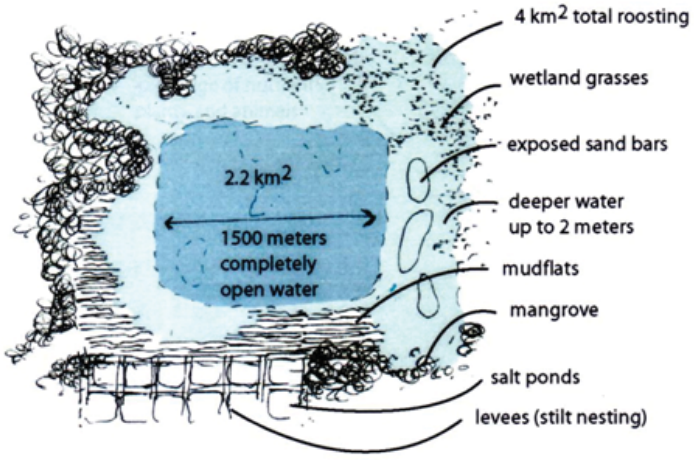
Winter Roosting Habitat

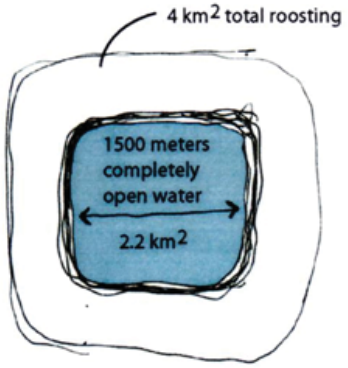
The same flock of 100 birds requires a core roosting area of 4 km2. In the winter, spoonbills roost in large flocks, primarily during the day, and have a highly specialized preferred roosting habitat. This habitat is characterized by a large area of shallow open water, which allows the spoonbill to detect approaching danger from at least 500 m away; a tidal lagoon of 2.2 km2 with water 4 to 20 cm deep and a salinity of 0-48 ppt, surrounded by a moat 2 m deep for prey habitat and protection from land predators, provides ideal roosting conditions.

Image credit: Jin-Han Kim, "Rolling Circle" 1998, Hankook Tire Co Korea

In addition to this open-water area, the spoonbill's roosting habitat must include a variety of edge conditions for daytime foraging, bathing, socializing, and playing. These habitats include exposed sandbars, mudflats, mangrove and wetland grass edges, brackish tidal pools, and turbid lagoons.

Although this description represents the ideal conditions for the Black-faced Spoonbill, with active habitat management these areas can be adjusted to fit reduced spatial capacities or to accommodate more birds per square kilometer. Preserving the specialized character of this natural setting is essential to ensuring the survival of this critically endangered bird.





The East Asian - Australasian Flyway

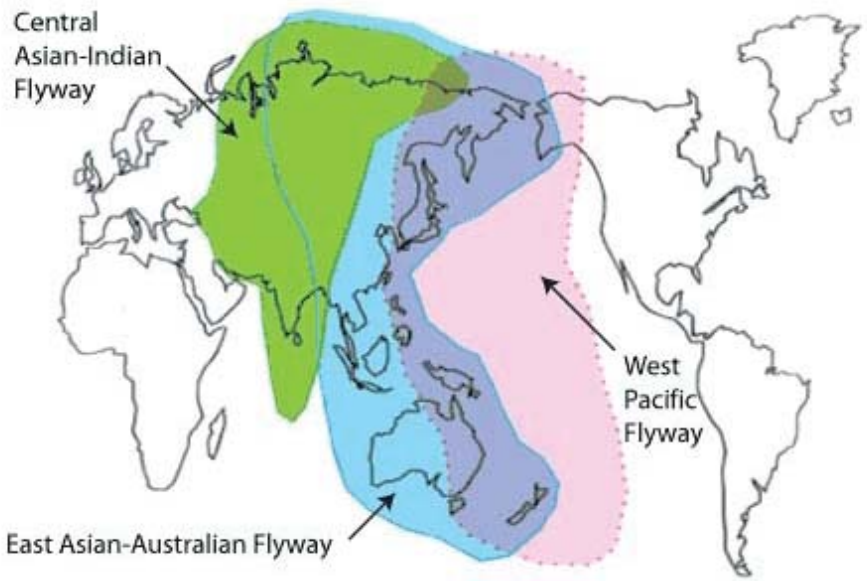
The East Asian - Australasian Flyway

The East Asian - Australasian Flyway encompasses the entire range of winter and summer habitats of 50 million migratory birds and extends over North and South Korea, Japan, Taiwan, China, Vietnam, and the Philippines. For some species it reaches as far as Australia, Russia and Alaska. This flyway provides breeding and foraging habitat to 28 threatened or endangered species. Habitat preservation along the entire route is an ecological imperative.

Threats

Habitat destruction is the biggest threat facing birds of the East Asian - Australasian Flyway, including the Black-faced Spoonbill. Land reclamation has disturbed and destroyed wetlands in China, Vietnam, Taiwan, Japan and Korea.

Many wintering and breeding sites along the flyway are not protected, including sites that face pressure from urbanization, pollution and coastal erosion. The Black-faced Spoonbill is in imminent danger of losing critical habitat in South Korea. In 2006, 58 spoonbills were recorded in the Songdo tidal flat, an area slated for development. The Incheon Free Economic Zone (IFEZ), including the Songdo International Business District, has already claimed 3,000ha of the bird's scarce remaining habitat in the mudflats near Incheon City. If construction continues as planned, this project will completely eliminate a key spoonbill habitat.



The East Asian - Australasian Flyway

Protecting the Flyway

Birds from countries around the Pacific Rim, including several species that migrate to Alaska, depend on habitat along the flyway. For this reason, sites along the flyway most threatened by development or other land use should be earmarked for conservation efforts and wildlife management. In 2008, 18,218 birds (shorebirds and waders) stopped at the Songdo tidal flat during their annual migration, making this mudflat a critical habitat area for many species, besides the endangered Black-faced Spoonbill.

*Black-tailed Godwit (*Limosa limosa*), Songdo Tidal-flat*
Photo © Jan van de Kam / Birds Korea

Black-faced Spoonbills are legally protected in China (including Hong Kong), Taiwan, Japan, North Korea and South Korea. Many breeding sites in North Korea have been designated as sea bird sanctuaries and sites in China have been declared non-hunting areas. SAVE's efforts in Taiwan created a protected habitat area for wintering spoonbills and developed a vibrant and sustainable economy based on technology, fishing and ecotourism.

Photo by Young-Hae Kim

The future of the Black-faced Spoonbill in Korea, however, is in doubt. Most of the bird's critical breeding areas are in or near the Demilitarized Zone, which encompasses an expansive but fragile system of mudflats and islands. Major developments, such as the Songdo IBD, seriously threaten the spoonbill.

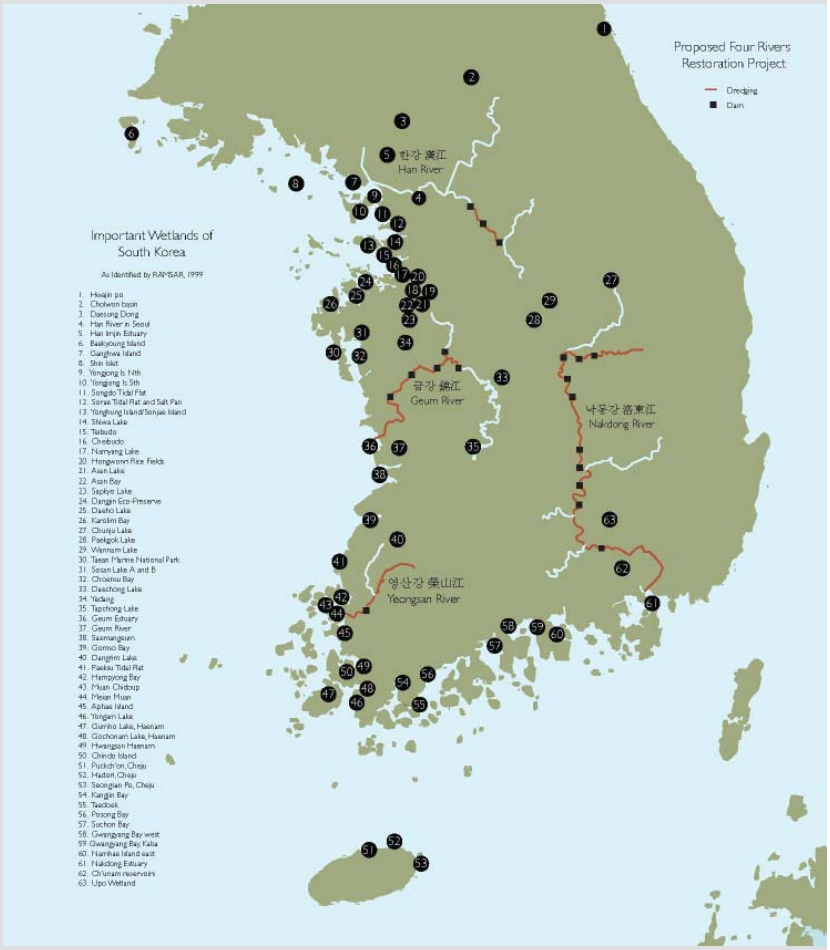
SAVE recognizes the need to protect the entire international flyway to ensure the survival of the Black-faced Spoonbill and other shorebirds. SAVE has built a coalition of environmental groups, students, universities and other organizations to preserve important spoonbill habitat sites, protect the flyway and ensure the long term survival of the Black-faced Spoonbill. This coalition needs increased support and visibility to make these efforts a success.

The Ecology of Tidal Mudflats and River Networks

Tidal mudflats occur in shallow shores, especially near the mouths of rivers. They provide crucially important habitat for migrating birds, as they rely on the abundance of crustaceans that populate these shallow waters. The extent and health of these wetlands depends on several factors, such as the existence of a relatively flat coastline, the steady influx of sediment from rivers and landfilling of these sensitive areas. Another determining factor is the tidal range, which on the west coast of South Korea is one of the highest in the world, peaking at nearly 10m. This generates, if left to its natural processes, broad areas of mudflats.

The South Korean coastal wetlands provide a unique habitat for many species, including at least 23 species in internationally important concentrations under the criteria of the Ramsar Convention (Moores 2006). A number of endangered species rely on these areas as stop-overs in their migration routes or as breeding and wintering habitat. Such is the case with the Black-faced Spoonbill, one of the most endangered bird species on Earth.

The pressure for urban and agricultural expansion along the western coast of South Korea has led to vast “reclamation” projects, in which shallow waters are filled with land, destroyng ecologically essential mudflats. The National Masterplan (1984-2001) estimates 66.5% of the remaining coastal wetlands as fit for reclamation. The South



Important Wetlands of South Korea and Proposed “Four Rivers Restoration Project”

Songdo Tidal-flat and Sorae Creek, Photo © http://maps.daum.net

The Ecology of Tidal Mudflats and River Networks

Korean Ministry of of Maritime Affairs and Fisheries predicted, in 2006, that the loss of 44.5% of remaining tidal flat would occur by 2010, which would correspond to "an approximate 75% decline in tidal flat area from a historic total of c. 460,000 ha to less than 112,000 ha, with most of this loss occurring in only 50 years" (Moores 2006).

In addition to the direct destruction of mudflats, the pressures exerted inland could prove even more destructive. The "Four Rivers Restoration Project" will build new dams along the course of major rivers, preventing normal sediment transport to the coastal areas. The diminished influx of silt will disrupt the normal erosion-deposition cycle and, in time, the lack of fine sediment circulating in the coastal areas is expected to increase coastal erosion and could permanently destroy coastal wetlands.

The continued destruction of vital habitat for already vulnerable species will create tragic consequences, as the available mudflat drops below the critical area necessary to sustain the migrating and resident populations of wading and shore birds. Apart from the obviously unacceptable loss of several sensitive species, the reclamation projects violate international agreements signed by the Government of South Korea, such as the Ramsar Convention.

The Songdo Tidal Flats host the Black-faced Spoonbill and several other species of vulnerable migrating birds, some with migration routes that extend as far as the United States of America and Australia. Even though these mudflats obviously meet the Ramsar Convention's criteria for wetlands of international importance, South Korean authorities have failed to protect them and are now in the process of obliterating them.

Elsewhere in the world, the economic importance of wetlands is well established, not only through their obvious ecological importance, as fisheries, wildlife refuges and as natural filterers of coastal waters, but also in generating revenue, through seafood, ecoturism and birding.

Songdo Tidal Flats exhibit a high tidal range (vertical feet of ocean rise) offering a variety of habitat areas

Tidal mudflats are complex and valuable ecosystems

Construction in the Songdo Tidal Flats

South Korea's Threatened Waterways

Map of South Korea's 4 Rivers Project

The Han River, South Korea's fourth largest river, which flows through Seoul

Photo: KFEM, ⓒ박종학

"To say that 'the Four Rivers Project and other government-sponsored "reclamation" projects would drastically harm the habitat required for the Black-faced Spoonbill's survival' is an understatement. It's more dire than that and the wheels of Korea's construction cartels are already in motion in a war against nature itself."

-James Card, associate editor Ducks Unlimited

South Korea's coastal wetlands are a unique product of the country's nearly 10-meter tidal flux, which has created broad areas of mudflat. At least 23 species of birds in internationally important concentrations depend on this distinctive environment. These tidal flats are threatened by encroaching development and plans to fill or "reclaim" the areas. Construction of the Songdo IBD has already filled 80% (10,000 acres) of the habitat and plans to fill more. Unfortunately, this type of blatant environmental destruction, enacted under the banner of the "Green Revolution," is the name of the game in South Korea.

One recent "restoration" project, the Saemangeum Reclamation Project on the country's west coast, decimated two estuaries and a tidal flat that provided vital habitat to birds of the East Asian - Australasian flyway. South Korea, a member of the Convention of Wetlands of International Importance (Ramsar Convention), ranks 130 out of 159 members in its efforts to preserve its wetlands. The total acreage of South Korea's protected wetlands is the equivalent of one-fifth of what was destroyed in the Saemangeum project. In 2006 the South Korean Ministry of Maritime Affairs and Fisheries predicted that by 2010 the country will have filled nearly half of its remaining wetlands. Nial Moores, co-founder of Birds Korea, concludes that this corresponds to "an approximate 75% decline in tidal flat area from a historic total…with most of this loss occurring in only 50 years." Though Songdo meets the qualifications of a wetland of international importance, South Korea has once again turned a blind eye in the interest of short-term economic prosperity.

South Korea's Threatened Waterways

More frightening still, the proposed "Four Rivers Restoration Project" threatens both rivers and the wetlands that depend on them on a massive scale. The project will involve constructing at least 16 new dams, rebuilding 87 old dams, and dredging 570 million cubic meters of sediment from 428 river miles. Though the government claims that the project will improve water quality and help restore the ecosystem, it will in fact further destroy the dwindling habitat of migratory birds and other river and wetland species. On November 26, 2009, in reaction to the release of the project's hasty environmental impact report, over 10,000 South Koreans filed a lawsuit to halt the construction and declare the project unconstitutional. The Four Rivers Restoration Project, however, has influential supporters. South Korea's President Lee Myung-bak is a strong proponent of the project, and the United Nations Environmental Program has mistakenly billed the project as an eco-friendly river "clean-up" in its press releases.

South Korean citizens and environmentalists remain unconvinced about the benefits of the project. At a time when other countries are restoring rivers by removing dams and concrete walls, the Four Rivers plan, which calls for buttressing 151 miles of river with concrete, seems out-of-date. As quoted in a recent article in Yale's *environment 360*, a researcher at the Korea Institute of Construction technology called the project "a grand disaster that any expert can clearly foresee with common sense."

The health of South Korea's wetlands depends on the steady influx of sediment from rivers. Damming the four rivers will prevent sediment transport to the coastal areas and the diminished influx of silt will disrupt the erosion-deposition cycle of a healthy wetland. The lack of fine sediment could increase erosion and destroy habitat. Clearly this would have catastrophic consequences for the Songdo tidal flat, other coastal wetlands, and eventually cities located along the coast. As these projects are being rushed into production, urgent action is necessary to ensure the preservation of these fundamental ecosystems.

Eco-tourism: An Ecological and Economic Opportunity

"Black-faced Spoonbills should offer an example of how to get eco-tourism right; Taiwan is using the bird as a pin-up for its tourist industry. By contrast, Korea is publicly trumpeting eco-tourism but destroying spoonbill habitat."

-Christian Oliver, Financial Times, 21 Sept. 2009

Tourism is one of the world's largest industries, making up more than 10% of the global economy. Eco-tourism is one of the fastest-growing segments of the economy and has the potential to attract international visitors, thereby expanding markets and revenue. With its rich ecological and cultural resources, the Songdo Tidal Flat region could readily develop an eco-tourism industry that would appeal to domestic and international tourists.

The results of such efforts could echo those seen in Chiku Lagoon, Taiwan, where SAVE International successfully averted a potential environmental disaster by transforming the site of a planned industrial development into a successful eco-tourism destination, the Tsengwan River Estuary Wildlife Conservation Area. Investment in this site's infrastructure has made the Black-faced Spoonbill one of the most recognized birds in Taiwan, with constant media attention and promotion by local organizations attracting busloads of tourists on weekends and holidays. Local restaurants serve as eco-education centers; souvenir and binocular vendors crowd the bird-watching stations. Local fishermen take tourists by boat to see Chiku Lagoon and its barrier islands. In 2001, over 1.5 million people came to watch the Black-faced Spoonbill during its winter stopover. Notably, birding is a particularly profitable form of eco-tourism: in the U.S., birders contributed $36 billion to the economy in 2006 (U.S. Fish and Wildlife Service, 2009).

While publicly trumpeting its so-called "green revolution," South Korea continues a campaign of development that destroys environmental resources. Eco-tourism offers a more economically and ecologically sustainable alternative. An eco-tourism area in the Songdo Tidal Flat could be of great benefit to the Songdo IBD, offering an attraction that would not only provide an additional draw to residents and visitors, but would help to legitimize the development's "green" image.

About SAVE International

The Official newsletter of SAVE (Spoonbill Action Voluntary Echo) International Spring 2009

Spoonbills Speak

echoes across the Pacific

www.earthisland.org/save

SAVE TEAMING WITH THE ENVIRONMENTAL PLANNING STUDIO

The advanced environmental planning studio at U.C. Berkeley focuses again on the plight of the spoonbill in Korea. Recognizing a critical link between farm practices and food sources necessary for baby spoonbill survival, the Berkeley team will focus on a demonstration project with thirty farm families on the southeast coast of Ganghwa Island. Here, rice paddies provide the only available fresh water invertebrates and small fish essential to very young spoonbills that cannot tolerate the salt found in the diet of older birds. But farmers consider the spoonbills a pest, chase them away, stress the adult birds and reduce the foraging effectiveness. The demonstration project intends to develop mutually-beneficial farm practices and new on-farm economies for families who steward the birds.

2008 INTERNATIONAL SYMPOSIUM FOR PRESERVING THE BLACK-FACED SPOONBILL

Last July, Willow Lung Amman and Kristen Podolak, two University of California PhD Students, and lecturer Yoonju Chang traveled to Ganghwa, South Korea to present the work from an Environmental Planning studio on Black-Faced Spoonbill (BFS) preservation. While there has been tremendous success in habitat conservation efforts in the BFS winter habitat there have been few conservation efforts to protect the summer habitat. BFS migrate to South and North Korea during the summer to give birth and raise their chicks on small rocky islands off the coast. They forage on mudflats and in rice paddies on Ganghwa Island off the coast from Seoul. To understand the past, current, and future conditions on Ganghwa, students in the planning studio researched a range of topics including: land reclamation, cultural and historical sites, tourism opportunities, nesting and foraging locations, and development plans including a proposed tidal power plant. Willow, Kristen and Yoon's Korea presentation focused on developing sustainable tourism options that would serve to bring attention to the BFS and preserve habitat. Attendees at the symposium included the Ganghwa People's Network, the mayor of Ganghwa and other government officials, BFS enthusiasts from as far away as Jeju (the southern tip of South Korea), academics from tourism and ecology disciplines, and local people. During the trip the group took a boat tour to visit three nesting islands, two of which were located within the DMZ. The scientists recorded the number of nesting BFS pairs and chicks while photographers captured images of the birds. The work will continue this spring with another planning studio building on the work from last spring and the symposium this past summer.

NEW NEWSLETTER EDITORS

Last year three members joined SAVE, and they are also your new editors. Chia-Chia (Gina) Ou, Jessica Lai, Yu Shih are currently undergraduate architecture students at UC Berkeley. They first came into contact with SAVE by taking Professor Randy Hester's ED 1 class. The three undergrads are all from Taiwan and share a love for Black-Faced Spoonbills. They are honored to provide hot-from-the-press information of the whereabouts of the birds and SAVE's next big plan.

Photo: KFEM, ⓒ박종학

SAVE International

Founded in 1997, SAVE International is a volunteer group of professors, students and staff from the University of California, Berkeley, who work in conjunction with scientists, universities and environmental organizations in Taiwan and South Korea. SAVE's mission is to save the endangered Black-faced Spoonbill from extinction by protecting critical habitat along the length of its flyway. SAVE (Spoonbill Action Voluntary Echo) is a project of the Earth Island Institute and its members include concerned citizens around the world.

SAVE has enlisted the assistance of grassroots environmental groups, scientists and important legislators in their cause. From bake sales in Berkeley to international environmental conventions to top-level governmental meetings, this active group has had extraordinary success in affecting key decisions that impact the fate of the Black-faced Spoonbill.

International Advisory Committee

Dr. Y.T. Lee, Chair, Nobel Laureate, Taiwan
Dr. John Byrne, University of Delaware
Dr. Shenglin Chang, University of Maryland
Dr. Li-Yang Chang, Lawrence Berkeley National Laboratory
Dr. Annie Chin, National Taiwan University
Dr. Malcolm C. Coulter, IUCN Specialist Group, New Hampshire
Tom Dahmer, Ecosystems, Ltd., Hong Kong
Randolph T. Hester, University of California, Berkeley
Dr. Chu-Joe Hsia, National Taiwan University
Dr. Keelung Hong, California Pacific Medical Center
Dr. Jeffrey Hou, University of Washington, Seattle
Dr. G. Mathias Kondolf, University of California, Berkeley
Dr. John K. C. Liu, National Taiwan University
Marcia McNally, Community Development by Design, Berkeley
Dr. Deborah Savage, Tellus Institute, Boston
Dr. Wen-ling Tu, Shih Hsin University
the late David Brower, Founding US Chair, Earth Island Institute

About SAVE International

Endorsements

"SAVE International's work to help protect the endangered Black-faced Spoonbill provides a wonderful model for the future of ecological preservation. This rare bird appeared to be a lost species until SAVE intervened with a strategy that combines scholarly research, innovative planning, grassroots economic development, and political action. SAVE challenges the prevailing scientific beliefs about spoonbill habitat needs through a systematic synthesis of research from seemingly unrelated disciplines. Were it not for SAVE's work, and its ability to work with many groups, the spoonbill would certainly be headed for extinction.

Most important to imperiled species everywhere is the fundamental lesson SAVE teaches by example. They have successfully integrated conservation science and local people's needs in a singularly creative way. SAVE's commitment to protecting the Black-faced Spoonbills, and the rich wetlands that are their home, is an inspiration."

JANE GOODALL, Ph.D., DBE
Internationally renowned primatologist
and founder of the Jane Goodall Institute

"SAVE International provides an invaluable opportunity for our students to make a real difference in communities, both here in our region and, spanning two continents, in Taiwan. Students present their research, not only to faculty, but also to fishermen, residents and legislators. The real-life impact of their work is tangible and inspiring."

HARRISON S. FRAKER, JR., FAIA
Former Dean, College of Environmental Design, UC Berkeley

Success in Chiku

SAVE's achievements in Chiku, Taiwan, testify to their dedication and expertise in finding effective means of protecting the black-faced spoonbill. SAVE formed in 1997 as a reaction against the proposed Binnan Industrial Complex in Chiku Lagoon on the Tsengwen River estuary in southern Taiwan. SAVE worked with Taiwanese citizens and environmental groups to halt the construction of a petrochemical plant, create an economically viable alternative, and preserve the spoonbills' habitat. As a result of these efforts, the black-faced spoonbill population has risen from 400 in 1997 to around 2,300 birds in 2010.

This success resulted from a collaboration between long-time colleagues Randy Hester and John Liu. Hester, of UC-Berkeley, and Liu, of National Taiwan University, worked with students to examine the conservation biology needed to save the lagoon and devised an alternative plan to the Binnan complex. In the process, they discovered that the Environmental Impact Assessment (EIA) developed for Binnan had a fatal flaw: spoonbills feed at night and roost during the day. The EIA only took into account the spoonbill's daytime range, which is quite small. At night, the birds forage at a considerable distance. Through the application of scientific research, SAVE challenged the government's reports and proved that the spoonbills required a larger habitat area than the Binnan plan provided.

SAVE's efforts became a catalyst for a mass movement to preserve the black-faced spoonbill. Public sentiment built and in 2000, Taiwan named the black-faced spoonbill its Millennium Bird and its image now appears on Taiwanese passports. This momentum stopped the Binnan Industrial Complex. In 2002, Tianan County established the Tsengwen River Estuary Wildlife Conservation Area, a 1,750-acre area with 740 acres specifically reserved for black-faced spoonbill conservation. SAVE worked to create an alternative economy based on the unique natural and cultural resources of coastal Tainan County. Eco-tourism to the area now supports local restaurants, that serve as much as 10,000 meals a month, guides and allowed for the 16,000 jobs in the traditional fishing community to be preserved.

Though its winter habitat is preserved, the Songdo IBD will destroy the bird's summer habitat in South Korea. SAVE has rallied to repeat its victory in Taiwan and to once again defend this rare bird.

International Coalition to Save the Black-faced Spoonbill

Contact SAVE International in the United States or Taiwan at the addresses below, or visite our website at www.saveinternational.org

SAVE International
c/o Earth Island Institute
2150 Allston Way Suite 460
Berkeley, CA 94704
Contact: Derek Schubert
Phone: (510) 238-9652
Email: save.spoonbill@gmail.com

National Taiwan University
Building and Planning Research Foundation
P.O. Box 23-204
Taipei, Taiwan, ROC
Contact: John K.C. Liu
Phone: 011-886-0921926612

International Coalition to Save the Black-faced Spoonbill

The following organizations and individuals are among those who have endorsed SAVE International's campaign to save the Black-faced Spoonbill. For a complete list, visit SAVE's website at www.saveinternational.org.

- American Bird Conservancy
- Black Hills Audubon Society, Washington
- Chinese American Environment Protection Association, New York
- Colonial Waterbird Society
- Colorado Bird Observatory
- Earthfirst! Journal
- Geografica, Portugal
- Gray's Harbor Audubon Society, Washington
- Green Delaware
- Green Korea United
- Humane Society of the United Society
- Humane Society International
- International Crane Foundation
- International Rivers Network
- International Wildlife Coalition
- Donald Kennedy, President Emeritus and Bing Professor of Environmental Studies, Stanford
- Leavenworth Audubon Adopt-a-Forest, Washington
- Linnaean Society of New York
- Maine Audubon Society
- Marine Endeavors
- National Park Association of New South Wales, Australia
- Natural History Museum of Los Angeles County
- New Jersey Audubon Society
- North American Engineering Association
- Dr. Mitchell Northcott, New College, University of Edinburgh, Scotland
- Pacific Environment and Resources Center
- Pacific Seabird Group
- Rainforest Action Network
- Rivers Council of Washington
- Rocky Mountain Institute
- Salmon Protection and Watershed Network
- Save San Francisco Bay Association
- Sea Turtle Restoration Project
- Sierra Biodiversity Institute
- Sierra Club
- Spokane Audubon Society
- Taiwanese Association of America
- Taiwanese-Canadian Association
- Urban Ecology
- Vancouver Audubon Society
- World Endangered Species Protection Association
- World Nature Association

SAVE's Plan for Songdo

The project site plan above shows extensive infill of existing tidal flats. Image: Gale International (www.songdo.com)

Existing tidal flats, Photo © http://maps.daum.net

To preserve the black-faced spoonbill, SAVE international proposes that South Korea take the following actions:

1. Reaffirm the policy that Korea announced in 2008 when it hosted the Ramsar Conference of the Contracting Parties, that intertidal mudflats would henceforth be preserved;
2. Implement this policy by immediately classifying all qualified wetlands as Ramsar sites and ceasing to fill the remaining Songdo Tidal Flat
3. Improve the quality of water, nesting, and foraging habitat along Sorae Creek and in adjacent lake impoundments;
4. Find more appropriate sites for campuses, outside filled wetlands; and
5. Repair the proposed campus area to shorebird habitat.

Conserving all existing wetlands is a fundamental principle of sustainable development. In the fall of 2009, SAVE convened a workshop of scientists and green designers to devise a better solution for Songdo. SAVE's experience designing habitat for birds in other parts of the world where development, ecotourism, and functioning ecosystems coexist shaped its criteria for these alternatives.

SAVE's Plan for Songdo

The remaining area of tidal flat is designated "Section 11" and covers 1,016 hectares.

Alternative A

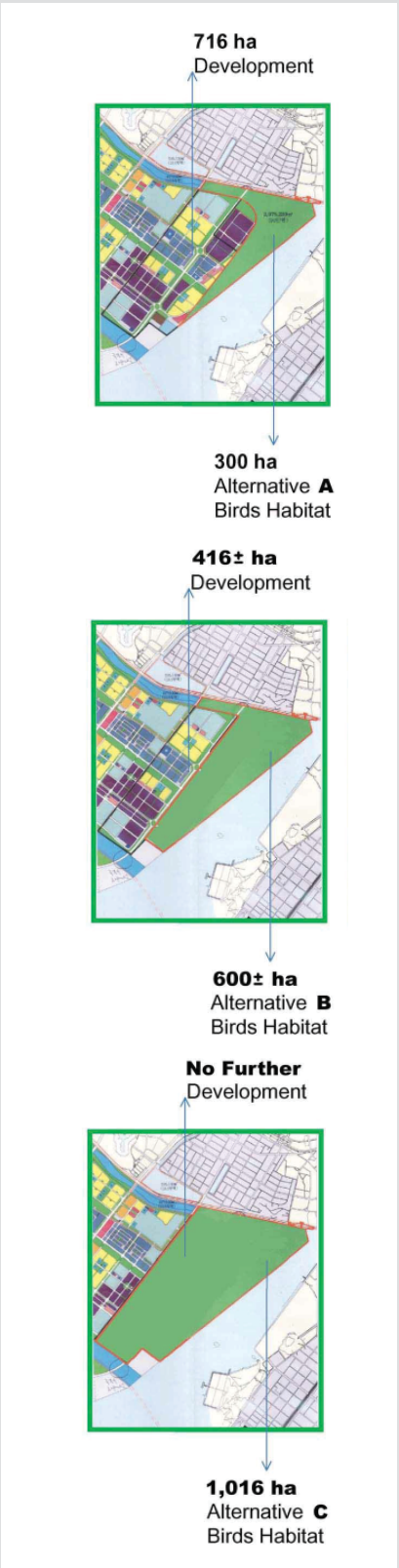
The current plan for Section 11 preserves only 300 hectares of tidal flat. The experts unanimously agreed that this area is inadequate for many shorebirds and wading birds and will concentrate flocks and increase their vulnerability to diseases.

Alternative B

Based on the construction currently underway, the participating experts concluded that the development of Section 11 should preserve at least 600 hectares of tidal flat. A larger block of contiguous habitat would be more valuable in that it would provide more usable habitat and create a buffer from human activities. Several species, including the Black-faced Spoonbill, require such a buffer for foraging and roosting.

Alternative C

Many of the experts, however, concluded that preserving the entire remaining area of 1,016 hectares would be more likely to support a healthy ecosystem. SAVE continues to research the spatial requirements of the birds of importance to link design with the latest science. SAVE also believes that with more design work, Songdo's remaining tidal flats could accomplish the more directly human-related goals of treating stormwater runoff and sequestering atmospheric carbon. SAVE is certain that preserving these tidal flats is essential to making the Songdo IBD a "green" city.



SAVE's Goals for Songdo

Ecotourism

Songdo City is in close proximity to major Asian cities such as Hong Kong and Seoul, thus, it is important to design for the city's international visitors as well as the residents of Songdo and Incheon. Black-Faced Spoonbills, rocky islets and vast tidal flats are characteristic of the area's unique geography and wildlife, and offer economic and educational opportunities for Songdo City.

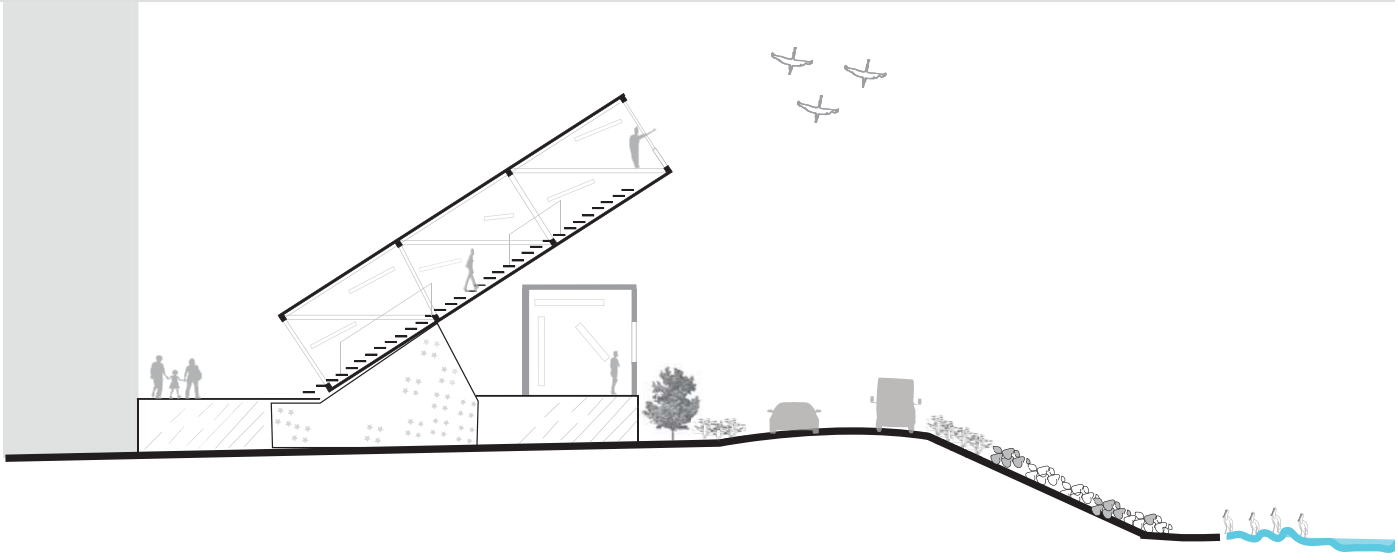
SAVE proposes that plans for Songdo incorporate modifications to include an ecotourism destination, with elements such as an ecotourism center, bird blinds to enable people to observe the foraging habits of area wildlife, and the extension of a green edge around the perimeter of the tidal flats.

Alternative Plan incorporating ecotourism

Education

The Songdo development's planned university campuses represent an important opportunity for research and environmental education. SAVE's alternative master plan proposes to increase the area of wastewater treatment ponds and wetland habitats around the perimeter of campus buildings, providing an outdoor classroom and educational opportunities for students.

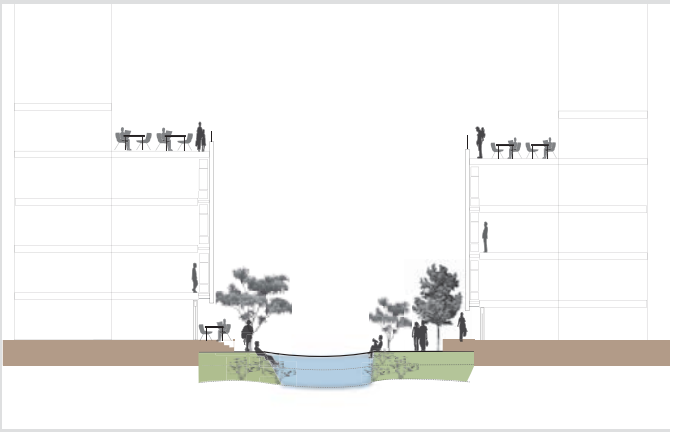
Education



SAVE's Goals for Songdo

Quality of Life

The urban context of Incheon and Songdo City offers limited exposure to the natural environment. Incorporating the unique natural features of the Incheon region within the Songdo development would allow residents and visitors to experience the natural world within a bustling urban setting.



Quality of Life

Wastewater Treatment

Tidal flats are nature's mechanism for cleaning pollutants in the water. With the recent loss of tidal flats by reclamation projects, Songdo has lost its natural cleaning agent. This is particularly alarming given the city's proximity to Incheon, where toxic chemicals from industrial areas flow into the waterways, arriving untreated in the tidal areas of Songdo. Black-faced Spoonbills and other wildlife cannot survive in these environs. Using existing holding ponds, SAVE has created a wastewater treatment plan that incorporates industrial wastewater at its source, The plan proposes using vegetated holding ponds and river channels to filter metals from the water, thereby creating a more hospitable environment for both people and wildlife and raising property values in Old Incheon.

Wastewater Treatment