

ASIA / PACIFIC

GETBOL, KOREAN TIDAL FLAT

REPUBLIC OF KOREA



Aerial view of Shinan Getbol © IUCN / Bastian Bertzky

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

GETBOL, KOREAN TIDAL FLAT (REPUBLIC OF KOREA) – ID N° 1591

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To defer the nomination under natural criteria

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property does not meet World Heritage criteria (viii) and (ix), and has potential, if revised, to meet criterion (x).

Paragraph 78: Nominated property does not currently meet integrity requirements and only partially meets protection and management requirements.

Background note:

The Committee's attention is drawn to Decision 43 COM 8B.3, taken in 2019, through which it inscribed the Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase I), China, on the World Heritage List on the basis of criterion (x). This serial property is located in the same flyway as the nominated property, and the decision also makes some recommendations relevant to the present nomination.

1. DOCUMENTATION

a) Date nomination received by IUCN: Original nomination received in March 2019.

b) Additional information officially requested from and provided by the State Parties: Following the IUCN field mission, the State Party of the Republic of Korea submitted additional information, as well as a revised management plan. Following the IUCN World Heritage Panel a progress report was sent to the State Party on 30 December 2019. This letter advised on the status of the evaluation process and sought clarifications on a number of points including rationale for the selection and the delineation of boundaries of component parts and the degree of impacts arising from anthropogenic modifications and related potential threats by infrastructure and development plans. The State Party submitted additional information on 25 February 2020.

c) Additional literature consulted: Various sources, including: Birds Korea (2010). The Birds Korea Blueprint 2010 for the conservation of the avian biodiversity of the South Korean part of the Yellow Sea; Choi, Y.R. (2014). Modernization, Development and Underdevelopment: Reclamation of Korean tidal flats, 1950s–2000s, *Coastal & Ocean Management Volume 102, Part B*; Hong, S.K., Lee, J.A., Ihm, B.S., Farina, A., Son, Y., Eun-Shik, K. and Choe, J.C. eds. (2007). Ecological Issues in a Changing World: Status, Response and Strategy. Springer Science & Business Media; Crockford, N.J., Millington, S. and Provencher, J. (2018). Challenges and opportunities for transboundary conservation of migratory birds in the East Asian Australasian Flyway. *Conservation Biology* 32(3): 740-743; Hong, S.K. (2012). Tidal-flat islands in Korea: exploring biocultural diversity. *Journal of Marine and Island Cultures*, 1(1):11-20; Kim, B.-S. (2017). Comparative Study of Inscription Process of Islands Property on UNESCO's World Heritage List: Focusing on The Southwestern Coast Tidal Flats' in Korea and the Sacred Island of Okinoshima and Associated Sites

in the Munakata Region' in Japan. *Journal of Marine and Island Cultures*, 6(2): 50-63. Kim, R. E. (2011). Is Ramsar Home Yet? A Critique of South Korean laws in light of the continuing Wetlands Reclamation. *Columbia Journal of Asian Law*, 24 (2):437-476; Koh, C.-H. and Khim, J.S. (2014). The Korean tidal flat of the Yellow Sea: Physical setting, ecosystem and management, *Coastal & Ocean Management Volume 102, Part B*; Lee, H.J., Kim, Y.H., and Chu, Y.S. (1998). Sedimentology of tidal flats on the west coast, Korea. *Ocean Research* 20: 153-165; MacKinnon, J., Verkuil, Y.I. and Murray, N. (2012). IUCN situation analysis on East and Southeast Asian intertidal habitats, with particular reference to the Yellow Sea (including the Bohai Sea). *Occasional Paper of the IUCN Species Survival Commission No. 47*, IUCN, Gland, Switzerland and Cambridge, UK; Miththapala, S. (2013). Tidal flats. *Coastal Ecosystems Series 5*, Colombo, Sri Lanka: IUCN; Moores, N., Young, L., Millington, S., Xia, S., Yu, L., Yu, X., Ri, K.S., Kim, T.S., Lim, J. and Glenk, F. (2019). National actions and international frameworks for the conservation and wise use of tidal flats and other coastal wetlands in the Yellow Sea. *Wetlands: Ecosystem Services, Restoration and Wise Use* (pp. 159-184), Springer, Cham; Murray, N.J., Ma, Z. and Fuller, R.A. (2015). Tidal flats of the Yellow Sea: A review of ecosystem status and anthropogenic threats. *Austral Ecology* 40, 472–481; Sato, M. and Koh, C.H. (2004). Biological richness of the Asian tidal flats and its crisis by human impacts. *Ecological Issues in a Changing World* (pp. 135-155), Springer, Dordrecht; Studds, C.E. et al. (2017). Rapid population decline in migratory shorebirds relying on Yellow Sea tidal mudflats as stopover sites. *Nature Communications* 8:14895. Yasumara, S., Wang, Y., Chae, E.S., Kim, T., Yoshida, M., Tsuji, K., Yamamoto, A. and Kim, E. (2014). The comprehensive report of the Yellow Sea eco-region support project 2007-2014, WWF, Kiost, Tokyo.

d) Consultations: 13 desk reviews received. The mission met with a wide range of stakeholders including State Party representatives, academia,

NGOs, local community representatives (including village leaders and fishing cooperative leaders), individual experts and others.

e) Field Visit: Bastian Bertzky and Sonali Ghosh, 30 September – 8 October 2019

f) Date of IUCN approval of this report: May 2020

2. SUMMARY OF NATURAL VALUES

The nominated property is located in the Yellow Sea, between China and the Korean Peninsula. Over 60 major and approximately 80 smaller rivers discharge sediment deposits into this semi-enclosed sea, including the Yellow and Yangtze Rivers in China and the Geumgang River in the Republic of Korea. This combination of high sediment loads and the partially enclosed geography of the Yellow Sea has resulted in the formation of one of the largest areas of tidal flats in the world.

However, damming of rivers and extensive coastal zone reclamations, paired with pollution and overharvesting have heavily altered the tidal flat ecosystems of the Yellow Sea. The 2012 IUCN situation analysis on East and Southeast Asian intertidal habitats notes a 35% loss of intertidal habitat from the six key habitat areas of the Yellow Sea since the early 1980s. The very poor overall conservation status of Yellow Sea tidal flats means that under criteria set by IUCN, this ecosystem as a whole is currently considered to be endangered on the IUCN Red List of Ecosystems. It is likely that habitat loss is the principal driver of declines of species that depend on the Yellow Sea during migration on the East Asian-Australasian Flyway (EAAF), a flyway for bird populations of at least 21 countries.

The nominated property lies on the eastern side of the Yellow Sea on the southwestern and southern coast of the Republic of Korea. It comprises a series of four component parts (see Table 1) – Seocheon Getbol, Gochang Getbol, Shinan Getbol (the largest, with 85.1% of the total area) and Boseong-Suncheon Getbol. It has a total area of 129,346 ha and the component parts are within buffer zones that total 74,497 ha.

The component parts exhibit a complex combination of geological, oceanographic and climatologic conditions that have led to the development of coastal sedimentary systems with diverse tidal flat ecosystems. Whilst all component parts are representative of archipelagic tidal flats in the Yellow Sea, each component part represents one of four tidal flat subtypes of Getbol: the estuarine type, open embayed type, archipelago type and semi-enclosed type. The proposed OUV of the property nominated under criteria (viii), (ix) and (x) lies in the diversity of these tidal flat ecosystems and its associated geological, geomorphological and ecological features and processes, and its high biodiversity.

No	Nominated component parts	Area (ha)	Buffer zone (ha)
1	Seocheon Getbol	6,809	3,657
2	Gochang Getbol	6,466	1,785
3	Shinan Getbol	110,086	67,254
4	Boseong-Suncheon Getbol	5,985	1,801
TOTAL		129,346	74,497

Table 1: Component parts constituting the nominated property, Getbol, Korean Tidal Flat

The selection of these component parts (as explained in some depth in the supplementary information provided) has sought to ensure that each component part responds to all three of the selected World Heritage criteria, to include a) significant areas of sand flats, mud flats, mixed flats and rocky habitats that are home to complex ecological communities; b) critical habitats for migratory birds and some endemic species; and c) geological and geomorphological features such as sand spits, sand-gravel strings, cheniers, tidal channels, tidal gullies, and numerous islands. Protection and management status has been another important aspect to focus the selection on areas where local communities are supportive and where an integrated protection and management system could be put in place.

Regarding criterion (viii), the nomination describes the nominated property as the only example of an island-studded high geodiversity tidal flat with a macrotidal range, set in a monsoonal environment. It has the world's thickest Holocene mud formation, deposited over a period of more than 8,500 years. Each of the four component parts has been selected to reflect geological and geomorphic features and processes that differ from the other three, whilst sharing the same main sediment source – the Geumgang River. The Shinan component part is unique in that it consists predominantly of mud flats, which have been created by the protection of a large group of islands against energetic winds and waves from the north and northwest generated during the Asian-monsoon winter. The considerably smaller Boseong-Suncheon component part is also characterized by mud flats, whilst the other two component parts, Gochang and Seocheon, show sand-dominant environments in an open-bay setting.

Regarding criterion (ix), the nomination focuses on complex ecological communities in muddy, sandy and rocky habitats that support various trophic levels. In the mudflats, Mud Octopuses (*Octopus minor*) are a top predator and keystone species, and deposit feeders like Japanese Mud Crabs (*Macrophthalmus japonica*), Fiddler Crabs (*Uca lactea*), and Polychaetes (bristle worms) are dominant species. On the sand flats, waterbirds are keystone species. Deposit feeders including Stimpson's Ghost Crabs (*Ocypode stimpsoni*), Yellow Sea Sand Snails (*Umbonium thomasi*), and Polychaetes as well as various suspension feeders like clams are dominant species.

Regarding criterion (x), the nominated dossier highlights the essential function of the nominated component parts as feeding and staging sites for

migratory birds in the Yellow Sea along the East Asian-Australasian Flyway (EAAF), one of the world's most jeopardized flyways. The nominated property supports internationally endangered species, whose habitats have shrunk to a small number of suitable stopover sites and breeding and feeding grounds. 22 globally threatened or near-threatened species, such as the Critically Endangered (CR) Spoon-billed Sandpiper (*Calidris pygmaea*), use the nominated property. According to the nomination dossier, the large number, both in terms of species and individuals, of shorebirds is supported by extremely high primary production and biodiversity of 375 benthic diatoms, 152 marine macroalgae and 857 macrobenthos among tidal flats under temperate climates worldwide. A total of 2,150 species of flora and fauna have been reported, including 47 endemic and 5 endangered marine invertebrate species besides a total of 118 migratory bird species.

The nomination highlights the links between geodiversity and biodiversity, and also describes how cultural diversity and human activity depend on the natural environment. Traditional use has evolved over time in the nominated property and is viewed as an integral part of the ecosystem. Multiple fishing businesses and village fraternities, which exist in association with the nominated property, seek to manage their communal fishing grounds in a sustainable way by means of self-governing rules, joint operations and coordination of timing, location, and size of catches.

3. COMPARISONS WITH OTHER AREAS

The nomination dossier provides a comparative analysis that is undertaken in considerable technical depth, and has brought together inputs from a network of specialists with global experience. The analysis compares 40 sites representing ocean and coastal wetland ecosystems, including tidal flats. Six World Heritage properties were shortlisted (Wadden Sea, Banc d'Arguin National Park, Sundarbans National Park, Halong Bay, High Coast / Kvarken Archipelago and Galapagos) for the analysis, which concluded that the Wadden Sea was the only site outside the Yellow Sea region that hosted wide tidal flats under a temperate climate similar to the nomination, but that it has different geology, geomorphology, oceanography, productivity and biodiversity. Within the Yellow Sea region, the Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase 1) is the most comparable site, but similarly the analysis cites the different geology, geomorphology and oceanography, and that this property has been inscribed under criterion (x) only.

IUCN notes however that the analysis poses a number of questions and issues, which are also discussed in the following sections related to integrity. Firstly, there are some more sites in the region that could have been compared, such as the Mundok Migratory Bird Reserve, a Ramsar and East Asian-Australasian Flyway Partnership (EAAFP) site on the west coast (along Chongchon and Taeryong River estuaries) of

the Democratic People's Republic of Korea, which appears to possess a similar tidal flat landscape and geodiversity. Some literature also notes the importance of the Ariake Sea in western Kyushu, Japan, as it has similar environmental characteristics. In terms of other tidal flat sites in the Republic of Korea, additional information by the State Party supplements the comparison of the selected component parts and other sites in the sedimentary system of Geumgang River of the nomination with tidal flats influenced by the Hangang River system. Besides a number of data deficiencies, the selected component parts do not appear to clearly stand out compared to these sites. Some of them appear to contain similar geomorphological attributes and comparable or higher waterbird counts. This poses fundamental questions for integrity, as the selected nominated component parts do not appear to contain the full range of attributes necessary to express OUV.

Regarding criterion (viii), a key element of comparison that is not considered is the relatively large size of the Wadden Sea, as the most directly comparable existing World Heritage Site, comprising a single contiguous system of more than 1.1 million hectares. In contrast only the Shinan Getbol is a relatively large area with extensive mud flats, but still less than 10% of the size of the Wadden Sea, whilst the three other component parts together make up only 5% of the area of Shinan. Undoubtedly, Shinan Getbol presents an impressive and extensive set of ongoing geological processes, however the remaining component parts are limited in demonstrating extensive coastal systems, and the arguments for their meeting criterion (viii) depend on the definition of a rather specialized classification of Getbol, which advances an argument that the selected areas as adequate to represent four different tidal flat types. Two other, significantly smaller, component parts, Gochang and Seocheon, show sand-dominant environments in an open-bay setting. The last one, Boseong-Suncheon is also dominated by mud flats, but it exhibits simple geomorphology except for scenic views of salt marshes. Whilst the complex coastlines and numerous islands with a macro-tidal regime and significant sediment input of Shinan Getbol, set in a monsoonal environment is undoubtedly impressive, this does not imply that the nominated property as a whole can be considered globally outstanding.

Regarding criterion (ix), the dossier puts forward the nominated property's diversity and primary production, arguing the latter as higher than in the compared sites. However, primary production is the only data provided for the biological and ecological processes, and the productivity of the areas included in the nomination is a small part of the overall mud flat ecosystems within the Republic of Korea (and more widely in the Yellow Sea). The nomination falls short in providing the scientific evidence to support this criterion. More ecological research seems to be required to support a case under criterion (ix) and to inform the choice and extent of component parts. As with criterion (viii), the small size of component parts is limiting, and again the obvious comparison with the much larger area of the Wadden Sea is striking. The comparison in terms of integrity is also limited. Whilst it is stated that the

nominated property contains complex food webs in numerous microhabitats within a “unique, pristine and interconnected terrestrial-coastal-marine ecosystem”, IUCN notes that the connection between terrestrial, coastal and marine parts of the ecosystem has been severely disturbed by anthropogenic modifications, and is not pristine (see section 4.5). Finally, it is important to note the level of compromise to the overall integrity of ecosystem within the wider Yellow Sea system due to reclamation, development and pollution (further discussed in section 4).

Regarding criterion (x), the analysis could have been strengthened with comparisons to other Yellow Sea sites, especially with the Migratory Bird Sanctuaries in China. With the exception of the 110,086 ha component part of Shinan, the component parts provide very limited areas ranging from 5,985 ha to 6,809 ha, which do not compare with the two component parts of the Migratory Bird Sanctuaries of 144,839 ha and 43,804 ha respectively, or with the more extensive systems of the Wadden Sea. In terms of the selected component parts, the entire dossier lacks long-term status, occurrence and trend information on bird species and populations. Such data on migratory bird species should have been applied to assess how the component parts are placed within the regional Flyway-wide context. This is especially relevant considering that, at a global scale, the most important biodiversity conservation value of the intertidal and coastal systems in the Yellow Sea is their vital role as hub of the East Asia-Australasia Flyway (EAAF).

EAAF is characterised by the largest number of Endangered (EN) and, in some cases, Critically Endangered (CE) species, and is among the most threatened flyways worldwide. Whilst the entire EAAF faces various threats, the Yellow Sea is the focus of greatest concern, according to the 2012 IUCN situation analysis on East and Southeast Asian intertidal habitats. This IUCN study identified the eastern Yellow Sea Coast of the Republic of Korea with nine Important Bird Areas (IBAs) as a key area for shorebirds and waterbirds in the EAAF. However, the component parts of the nominated property cover only the central and southern part of this key area and only partially the respective IBAs.

IUCN, in collaboration with UN Environment WCMC, has undertaken supplementary comparative analysis, focusing on criteria (ix) and (x), finding that the biodiversity that the nominated property seeks to represent is of global significance, especially with regard to possible application of criterion (x). Getbol, Korean Tidal Flat, overlaps with the freshwater ecoregion of Southeastern Korean Peninsula, which is not yet represented on the World Heritage List under biodiversity criteria. However, the Yellow Sea marine priority ecoregion is already represented. The nominated property is not found in a biogeographical unit, which has been mentioned as a gap on the World Heritage List, but the Eastern Yellow Sea Coast, more broadly, is highlighted in IUCN situation analysis on East and Southeast Asian intertidal habitats as one of

the key areas having the greatest values in terms of shorebird diversity.

The supplementary comparative analysis notes that the nominated property provides important stopover sites for migratory birds that travel along the EAAF, especially since the reclamation of Saemangeum. Compared to other World Heritage properties with important tidal wetlands inscribed under biodiversity criteria, the nominated property appears to show a comparable level of biodiversity, based on the available data. The tidal flats have a high level of endemism to the Yellow Sea and host a number of globally threatened bird species, either residing or migrating through the site, such as the Spoon-billed Sandpiper (*Calidris pygmaea*), which is Critically Endangered (CR) and one of the key species whose habitat is found within the recently inscribed Migratory Bird Sanctuaries Along the Coast of Yellow Sea-Bohai Gulf of China (Phase 1).

Taken as a whole, IUCN concludes that the comparative analysis, whilst having many aspects that are commendable and thorough, does not adequately consider questions of integrity in framing its conclusions, and thus remains an unconvincing analysis in relation to the application of the natural criteria. The nomination’s approach to identify sites with attributes that match all three criteria at the same time, with a superimposed filter on protection and management, has resulted in a limited selection of four component parts. Three of these component parts are relatively small, and the approach has omitted areas that would have been important to express OUV and meet integrity requirements under each of the three criteria. The resulting limited areas are surpassed by the comparative scale of the Wadden Sea with its significantly larger component parts containing contiguous and intact tidal flats.

Nevertheless, IUCN underscores that the wider ecosystem within the Yellow Sea region is of global significance especially under criterion (x), which could potentially be demonstrated through a re-designed nomination that would seek to more fully capture key EAAF sites and IBAs. In terms of criterion (ix), there would be a clear need to gather and generate scientific evidence that may potentially demonstrate significance and inform the choice and design of potential component parts. For all three criteria, the component parts lack size to represent complete and intact geomorphological processes (viii), ecological processes (ix) and habitats (x).

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The Republic of Korea has 100% ownership of the nominated property including the marine buffer zones. The Ministry of Oceans and Fisheries has the authority over all tidal areas below the high tide mark. The Ministry of Environment is responsible for estuaries, feeding into the nominated areas, as well as the biodiversity, including migratory waterbirds.

The four component parts of the serial nominated property are legally protected in their entirety as Wetland Protected Areas (WPAs) under the Wetlands Conservation Act (WCA). Various other laws and regulations, including the Conservation and Management of Marine Ecosystems Act, apply in the nominated property and buffer zones, potentially restricting damaging activities.

A strong addition to the legal framework for conservation is the Tidal Flat Act, adopted in 2019, which epitomizes a shift in policy moving from reclamation policies to tidal flat conservation. According to supplementary information by the State Party, the act intends to restore reclaimed tidal flats in 25 locations and to sustain healthy tidal flats, which are destined for either conservation, safe management, resting, or production and experience. A 2019-2023 action plan for tidal flat ecosystem restoration has been developed with the objective to expand areas for tidal flat restoration projects and to enhance restoration incentives and project management systems.

Traditional fishing activities are allowed to continue at current levels and subject to self-governed rules by the fishing cooperatives in accordance with the Fisheries Act and Wetland Conservation Act. The inherent interests of, and traditional management by, the local communities play an important role in ensuring the effective protection of the nominated property given that healthy tidal flats underpin many local livelihoods.

The nominated property also overlaps with four Ramsar sites (Seocheon, Gochang, Jeungdo and Suncheon Bay) and three UNESCO Biosphere Reserves (Shinan Dadohae, Gochang and Suncheon), but integrated management arrangements between these other designations do not appear to be in place. Furthermore, areas that appear important for inclusion in the nominated property have apparently been excluded due to their being insufficiently protected. As the biodiversity and geodiversity of the nominated property depend on the processes and ecosystems that extend far beyond the component parts, safeguards and protection measures would be required in the wider region, including the Geumgang river catchment.

IUCN considers that the protection status of the nominated property meets the requirements of the Operational Guidelines.

4.2 Boundaries

The boundaries of the nominated property reflect geoheritage values and respond to some critical sites for key migratory bird species and their habitats. They also reflect existing human activities and anticipated development needs, and administrative boundaries. The boundaries of the nominated property have been delineated primarily based on extent of the tidal flats, taking into account, firstly, the survey results of the tidal flat area measurements conducted every five

years by the Ministry of Oceans and Fisheries (MOF), and secondly the intertidal wetlands as stipulated in the Ramsar Convention and subtidal areas including tidal channels less than six metres in depth.

However, IUCN notes significant shortcomings regarding the integrity of the nominated serial property, both in terms of intactness and completeness. In terms of intactness, IUCN notes that the nominated property is in many areas surrounded by heavily modified, urban, industrial and agricultural landscapes linked to large-scale land reclamation. The intactness of the overall mudflat system seems to be questionable in light of the fact that 22% of the tidal flats have been reclaimed according to the nomination dossier. 31% of the coastline has been modified by constructed embankments, from some of which subsequent sedimentary structures have developed. The Saemangeum Reclamation Project and other large infrastructure projects (e.g. bridges and ports) have also affected parts of the nominated property.

The modified areas often belong to neighboring municipalities that have chosen a different development path compared to those municipalities involved in the nomination. The boundaries of the nominated property therefore encompass mostly areas where protection and management requirements might be met and correspond exactly to the extent of the Wetland Protected Areas (WPAs) designated under the national Wetlands Conservation Act. However, with the exception of Shinan Getbol, they include only small areas that may still be relatively intact within a much wider compromised setting. Importantly though, uninhabited islands are generally included in the nominated property, not the least because they provide important resting areas for birds, whereas the, usually larger, inhabited islands are included in the buffer zone.

In terms of completeness, the most obvious issue regarding boundaries is that only four component parts were selected for this nomination, although tidal flats extend along most of the west coast of the Republic of Korea. The supplementary information by the State Party explains the approach to the selection of component parts in the nomination, and this confirms that the goal of the nomination is that each component part responds to all three of the selected criteria for the nomination. The result is that the boundaries appear to reflect an emphasis on the presentation of geoheritage values (related to the Geumgang River sedimentation system), and do not include many areas supporting biodiversity values justifying consideration under criterion (x).

Reviewers note that the nominated property does not include several tidal flats, and their hinterlands, which are internationally important for waterbirds, such as in Incheon (Ganghwa, Yeongjong, Song Do) and Gyeonggi (Hwaseong and Asan Bay). Important habitats and breeding sites for several globally threatened species are missing, including for Chinese Crested Tern (*Thalasseus bernsteini* – CR), Black-faced Spoonbill (*Platalea minor* – EN), Chinese Egret (*Egretta eulophotes* – VU), Saunders's Gull

(*Chroicocephalus saundersi* – VU) and Swan Goose (*Anser cygnoid* – VU). This is epitomized by the omission of a number of Important Bird Areas / Key Biodiversity Areas (IBAs / KBAs) and other priority areas for nature conservation.

Where there is overlap with IBAs, the boundaries in detail appear to not reflect the main areas of importance. For example, the Shinan Getbol component part of the nominated property overlaps only partially with the Muan Tidal Flat Important Bird Area (IBA), and leaves out the Hampyeong Bay IBA. Another instance is the Ganghwa tidal flat, designated as a Natural Reserve, which has not been included in the nomination, even though it serves as the largest breeding site for the endangered Black-faced Spoonbills (*Platalea minor*) in the Republic of Korea, whilst exhibiting comparable or higher values in terms of biodiversity indicators and primary production as well as a comparable geodiversity.

Regarding criteria (viii) and (ix), the selection of four component parts, three of which are of limited size and geomorphological extent, lacks sufficient scale to cover complete intertidal mudflat systems, leaving out elements necessary to fulfill conditions of integrity. Only the Shinan Getbol component part consists of a large and particularly complex system of mud flats. Boundaries would need to include inshore marine areas, estuaries of feeder rivers and the hinterland, and in particular areas that support high concentrations of fish and waterbirds. Reviewers also noted that criterion (ix) is compromised by heavily altered shorelines, which would need to be restored. All four component parts exclude adjacent habitats which are linked by ecological processes, including omissions of contiguous tidal flats which are depended upon by waterbirds and other mobile species. Therefore, the nominated property does not represent the interconnected terrestrial-coastal-marine ecosystem and does not provide large-scale 'ridge-to-reef' continuity and connectivity.

Similarly, the proposed buffer zones do not function as a sufficient additional layer of protection that would capture adjacent habitat. The nominated property is only provided with narrow 500-m-seaward and 100-m-landward buffer zones. In response to concerns raised by the IUCN World Heritage Panel, the State Party concurs in supplementary information, that further expansion of the buffer zones is needed and commits to enhance the buffer zones "within two years following a possible inscription" by adding important wetlands and farmlands.

The nomination dossier notes that the comparative analysis indicates the possibility of an expansion of the nominated property when protection and management is in place. There is an indication of this nomination being the first step in a phased approach, and IUCN has sought further information from the State Party on its future intention. At this stage, the plans for further phases of nomination envisage a second phase for tidal flats fed by the Hangang River sedimentation systems. However, the level of detail for such a second phase is very limited, and there is not yet a

vision of a larger, phased approach. In contrast, such a vision with specific sites was provided as part of the nomination in the recently inscribed phase I of the Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China World Heritage property.

In summary, IUCN considers that the boundaries established in the nomination are not currently adequate: Firstly, the component parts, with the possible exception of Shinan Getbol, are not sufficiently extensive, by a considerable margin, to demonstrate the representation of the large-scale geomorphological and ecological processes of the Yellow Sea in the Republic of Korea, and thus undermine the case for criteria (viii) and (ix). Secondly, the component parts omit key areas of significance adjacent to the current areas, and also omit other Key Biodiversity Areas that could strengthen the series under this criteria. When viewed through the lens of biodiversity values, the boundaries selected appear to be in need of considerable amendments. Thirdly, taken as a whole, the buffer zones proposed are insufficient in size to provide protection for the nominated property.

IUCN considers that the boundaries of the nominated property do not meet the requirements of the Operational Guidelines.

4.3 Management

The agency in charge of the management of coastal wetlands is the Ministry of Oceans and Fisheries (MOF), and Regional Environmental Offices and Wetlands Centres collaborate with local governments in the management of coastal WPAs. The proposed integrated management system for the nominated property will involve the three provincial governments and five local governments involved in the nomination, plus the Ministry of Oceans and Fisheries (MOF) and the Cultural Heritage Administration (CHA).

The Ministry of Environment (MOE) and Korean National Parks Service (KNPS), being responsible for inland wetlands, were not extensively involved in the nomination. Only Shinan Getbol has a national park within its boundaries. In supplementary information, the State Party outlines several mechanisms in which the MOE and KNPS will be consulted in management. Supplementary information states that "*MOE's participation in the integrated management system as a cooperative institution will be discussed*" in case of inscription. However, noting the importance of inland wetlands and other inland habitats for many bird species, IUCN considers that systematic coordination between tidal flat management and management of inland habitat would need to be strengthened considerably and be put in place before or in the course of the nomination process.

The nominated property has adequate financial and technical resources, including staffing in all authorities involved, and these would be expected to be further increased upon inscription. There are many activities underway by different levels of government, non-

governmental organizations and local communities that support the effective management and enforcement of the WPAs that make up the nominated property. The on-the-ground management, conservation and restoration efforts are expected to be further strengthened, in collaboration with relevant partners, were the nominated property to be inscribed. There are also many measures in place to prevent, reduce and respond to risks (e.g. those related to natural and anthropogenic disasters).

Each of the four component parts has a site-level management plan, some of which are in the process of being updated. There is a documented governance and management system, key elements of which are already in place, including the Local Management Committees and the overall coordination by the World Heritage Promotion Team since 2014. The Getbol World Heritage Integrated Management Committee, the Getbol World Heritage Center, the Local Management Offices and the Network of Local Management Committees are proposed to be established after inscription. The integrated management plan, currently tentative, and an integrated monitoring system would also be implemented after inscription. IUCN considers that the integrated management plan would need to be complemented with more details on specific management interventions that would be required for supporting and maintaining the potential OUV.

Overall, IUCN notes that important management instruments, whilst triggered by inscription, are currently not in place. IUCN also considers that the focus of the management plan should be extended beyond the nominated property to also address the management of its buffer zone and surrounding area.

IUCN considers that the management of the nominated property partially meets the requirements of the *Operational Guidelines*, pending the update and implementation of the integrated management plan and all management instruments.

4.4 Community

Over 42,000 people inhabit the buffer zone of the nominated property, and many more people are using the nominated property and its buffer zone for various activities, including fisheries and tourism. Some of the local communities are still dependent on the tidal flats for their food requirements. Extensive consultation processes preceded the designation of the WPAs and the preparation of the nomination. In some areas, it had taken many years to overcome initial resistance and to finally secure support for the nomination. Overall, there appears to be strong stakeholder support for the nomination, and good collaboration among different levels of government and a wide range of stakeholders in the governance and management of the nominated property and its surrounding area. Local residents have become important stakeholders in the WPA Management Committee that has been established for each component part. Through these Committees residents

are involved in the management and decision-making processes on the nominated property. While the local communities and fishing cooperatives appear to be involved in these processes, some national NGOs have expressed an interest in being further consulted and involved.

Populations in many of the villages in the region around the nominated property are in decline due to outmigration to urban areas. It is projected that many island villages will be empty by 2030. This loss of people would also result in the loss of traditional ecological knowledge and values that sustained the nature-culture linkages in the tidal flat ecosystems. Historically tidal flat fisheries have been recognized to be intrinsically associated with local communities' livelihoods and culture. The nominated property is one of the places where one can experience four traditional activities of nationally important fisheries heritage (seaweed/laver farming, bare-hand fishing, salt-panning and use of Peolbae and other traditional fishing equipment). Continuation of such traditional practices has strengthened the cultural rights of the communities and is already contributing in some areas to sustainable ecocultural tourism activities. Both the provisions of the Wetlands Conservation Act and the objectives of the UNESCO Man and Biosphere Programme have helped to formally recognize and support the livelihood and benefit-sharing of the local communities. The communities are also self-regulated with their own rules and regulations pertaining to harvesting, including spatial and temporal closures (e.g. closure months for oyster and cockle harvesting differ in each county).

4.5 Threats

The coastal zones of the Republic of Korea have been severely impacted by past reclamation projects: when assessed in 2008 the total intertidal flat area reclaimed in the Republic of Korea was 60,800 ha, according to the Ministry of Land Transportation and Maritime Affairs, representing 22% of the total wetland area of the country. Coastal development has resulted in a decline of more than 65% of tidal flat area since the 1950s.

It is positive that, policy is shifting from large-scale reclamation towards tidal flat conservation and that restoration works are being carried out for some reclaimed sites. This is exemplified by the recent adoption of the Tidal Flat Act, and the adoption of other acts since the late 1990s, such as the Wetlands Conservation Act, and the Conservation and Management of Marine Ecosystems Act. As noted in the nomination, the Saemangeum Reclamation Project has had the biggest impact on the nominated property, affecting the sediment supply and biodiversity of both the Gochang Getbol and Shinan Getbol. Now both the nominated property and its buffer zone are legally protected from future reclamation and there are no new large-scale reclamation projects planned in the surrounding area.

The nomination dossier states that the long-term sustainability and viability of the Getbol is dependent on ongoing, regular, long-term supply of terrestrial sediment from several major rivers. Further to the request by the IUCN World Heritage Panel on impact monitoring and mitigation concerning river modifications and catchment areas, the State Party responded that following construction of the Geumgang River dam sedimentation in tidal flats in Seocheon Getbol Yubudo became more muddy. However, today the area is approaching a new equilibrium in tidal flat sedimentation with stabilized distribution pattern and water quality in good condition since 1997. The information provided does not address any upstream protections or monitoring to maintain sediment loads nor regulate nutrients arriving in the tidal areas.

Marine pollution is a major issue that is impacting all the component parts. Marine litter originates from both inland areas as well as internationally from marine sources. The country's Marine Trash Management Basic Plan 2019-2023 aims to reduce marine waste by 50% by 2030 and there are many activities underway. For example, the authorities provide support to fishers for the collection and safe disposal of the marine litter, including through many collection points both on land and in the sea. However, larger efforts appear to be required to address this issue in the nominated areas. Another potential issue is pollution of the tidal flats from inland sources, though this may be mitigated by a network of sewage treatment plants in the area.

Yellow Sea shipping lanes immediately adjacent to the Getbol are some of the busiest in the world, and in 2009 large parts of the Getbol were severely impacted by the Hebei Spirit oil spill with oil drifting from Daesan in the north to the southern tip of the peninsula. Oil tankers must now stay 10-25 miles offshore, and single-hulled tankers are not allowed in ports.

While fisheries within the nominated property are traditional, self-regulated and limited, fishing grounds outside the nominated property are intensively exploited in the Korean west sea. More than 250 target species are harvested by about 80,000 fishing vessels. Although knowledge of the status of many species harvested in commercial fisheries is limited, stocks are generally considered to be declining overall.

Tourism is concentrated in only a few places of the nominated property and its buffer zone (notable around Suncheon City), whereas many of the more remote areas (many of the smaller islands) have little or no tourism

The impact on shorebirds from habitat loss along the flyway is increasingly well documented; however, the threats faced by land birds are less well understood. Habitat loss has also been hypothesized to be a driver of decline for forest-dependent migrants such as flycatchers and thrushes overwintering in Southeast Asia. Evidence from temperate Asia has revealed that many migratory passerine populations have declined even with little habitat loss in the breeding grounds.

Recent studies now show that hunting is also a major threat to many migratory land birds.

Climate change and sea level rise pose a major threat but their exact impacts on the nominated property are not very well understood. The nomination outlines a range of planning, monitoring and adaptation strategies undertaken by the Republic of Korea in this respect.

In summary, there are significant issues with the nomination in that it does not meet the requirements of integrity, notably in relation to the boundaries that are considered currently too limited in scope. The approach to limit the selection to component parts that respond to all three criteria at the same time has resulted in a nominated property that is incomplete under each of the three criteria. The area is subject to a range of significant threats that are being met by a protection and management approach that is essentially sound within the areas proposed for nomination. However, despite welcome progress in strengthening protection, such as in relation to tackling the damage from past reclamation in the coastal zone, there remain a number of significant weaknesses when considering the wider protection of the processes and ecosystems on which the biodiversity and geodiversity of the nominated property depend.

5. ADDITIONAL COMMENTS

5.1 Consideration in relation to serial properties

a) What is the justification for the serial approach?

The justification for the serial approach is based in particular on the approach to recognizing OUV under criterion (viii) and, to a lesser extent, criterion (x). The four component parts all belong to a broader sedimentary circulation system of Geumgang River. Although all component parts represent island-type (archipelagic) tidal flats, each component part has a different coastal geomorphology with distinctive circulation sedimentation patterns. There are also notable differences in the ecological and biological values of the different component parts, including species composition, distribution and interaction. IUCN considers that there is a justification to consider a serial approach to nomination, given the lack of protection and management of large parts of the intertidal areas of the Republic of Korea. However, there is a fundamental problem created in the approach to component selection, which has resulted in the omission of key areas that respond to criterion (x) from the nomination. In the view of IUCN, this has resulted from a site selection approach that has been too restrictive in the filtering of component parts. In a serial approach made under several criteria it is possible to include component parts that respond to only some of the overall criteria for the series as a whole. Specifically, in this case, it would be possible to include in the nomination intertidal areas that respond primarily to criterion (x) and to a lesser extent to criterion (viii). In addition, the lack of protection and management systems in certain places, combined with missing support from local communities, seems to

have prevented the identification of a vision for a finite series of phased component parts.

b) Are the separate component parts of the nominated property functionally linked in relation to the requirements of the Operational Guidelines?

The four component parts are functionally linked in that they share the main sediment source, the Geumgang River, and serve, in the view of the nomination, to represent contrasting elements of the Getbol. However, the level of connectivity and integrity of the nominated property is compromised by the hard coastlines, river barriers, surrounding land use, past land reclamation projects and large infrastructure projects, and there are few direct functional linkages between the component parts, except in relation to their cumulative support to migratory species.

c) Is there an effective overall management framework for all the component parts of the nominated property?

The nomination dossier outlines a tentative integrated management plan for the whole nominated property to be fully activated after inscription, including the Getbol World Heritage Integrated Management Committee, Getbol World Heritage Center and Local Management Offices and a Network of Local Management Committees. There is a documented governance and management system, key elements of which are already in place, including the Local Management Committees and the overall coordination by the World Heritage Promotion Team since 2014.

6. APPLICATION OF CRITERIA

Getbol, Korean Tidal Flat has been nominated under natural criteria (viii), (ix) and (x).

Criterion (viii): Outstanding examples representing major stages of earth's history

The contention that the nominated property is the best, and perhaps only, example of island-type tidal flats in a macro-tidal setting in a warm temperate climate, and the fact that it contains the thickest known Holocene intertidal mudflat are important, and well documented in the nomination. However the arguments are not convincing in relation to the demonstration of OUV, being somewhat specialized and narrow in scope, tending to emphasize distinctive features of relatively small scale, rather than an approach integrated with conservation values in the Yellow Sea as a whole. Only one of the component parts, Shinan Getbol, consists predominantly of a particularly complex system of mud flats, and other component parts are either limited in their geomorphological extent and/or primarily demonstrating values that are surpassed in the large-scale inscription of the Wadden Sea.

IUCN further considers that the limited selection of four component parts, three of which are of small size, lacks sufficient scale to adequately capture the diversity of the intertidal mudflat system, and does not include all the necessary elements to fulfill the conditions of integrity. The integrity of the series is also

compromised by heavily modified coastlines and other human activities. A very much larger and significantly reconfigured area would need to be proposed for this criterion to potentially be applicable.

IUCN considers that the nominated property does not meet this criterion.

Criterion (ix): Ecosystems/communities and ecological/biological processes

The nominated property supports nationally and regionally significant values but there are several comparable examples of tidal mudflat systems of enormous ecological complexity along the world's coasts, often at a larger scale and within more intact overall ecosystems. The values documented in the component parts of the nominated property as currently nominated are not unique to these areas and, in most cases, their global significance has not been convincingly proven in terms of quality or quantity. There are many larger, more diverse and/or more pristine World Heritage sites encompassing interconnected terrestrial-coastal-marine ecosystems and the relatively small land and sea areas, beyond the tidal flats, included in the nominated property do not provide the same large-scale 'ridge-to-reef' continuity and connectivity of other properties. While the ecological and biological processes at play include many notable and illustrative elements, the nomination does not make a convincing case for these being of OUV.

Integrity considerations are also significant, and, with the exception of Shinan Getbol, the nominated property encompasses relatively small areas that are subject to a long history of human use. There is a high proportion (31%) of artificially hardened coastlines, and most major rivers are modified through river barriers (including the Geumgang and the Yeongsan River). The nominated property has only a narrow terrestrial buffer zone and is in many areas surrounded by heavily modified landscapes (urban, industrial and agricultural). The Saemangeum Reclamation Project and other large infrastructure projects (e.g. bridges and ports) have also affected parts of the nominated property. These limit the wholeness and intactness of the ecological and biological processes compared to the original natural state, given the small scale of the areas selected for inclusion in the series. For this criterion to potentially be applicable, a very much larger and significantly reconfigured area would need to be proposed that comprises important elements for the representation of ecological processes, such as the hinterlands and estuaries of feeder rivers.

IUCN considers that the nominated property does not meet this criterion.

Criterion (x): Biodiversity and threatened species

The nominated property contains a number of crucial natural habitats for in-situ conservation of the biodiversity of the Yellow Sea region, including threatened and endemic species. It supports 47 endemic (to the Yellow Sea) and 5 endangered marine invertebrate species. Reflecting its habitat diversity (including islands, rocky shores, beaches, sand flats, mud flats and salt marshes), some 2,150 plant and animal species have been recorded. The nominated property encompasses some of the critical stopover sites for several globally threatened species of migratory birds (at least one Critically Endangered, five Endangered and six Vulnerable) along the East Asian – Australasian Flyway (EAAF).

However, the selection of the areas for inclusion in the nominated property does not yet fully meet integrity requirements in terms of wholeness, and it only overlaps partially with four Ramsar sites, three EAAF flyway network sites and several Key Biodiversity Areas (KBA), whilst omitting adjoining areas of these priority sites, and leaving out completely other KBAs located along the coast. The proposed configuration of very narrow buffer zones does not appear to adequately support the protection of habitats, leaving out important parts of the hinterland and not providing an additional layer of protection against impacts from nearby intensive anthropogenic activity.

IUCN considers that the nominated property has potential to meet this criterion, subject to significant revision following further review and extension of the boundaries of component parts to include areas crucial for biodiversity conservation, supported by sufficiently sized and increased buffer zones and adequate protection and management arrangements.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopts the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC/21/44.COM/8B and WHC/21/44.COM/INF.8B2;

2. Defers the nomination of **Getbol, Korean Tidal Flat (Republic of Korea)**, taking note of the significant biodiversity values of this region that are potentially of Outstanding Universal Value (OUV), in order to allow the State Party to prepare a new nomination focused on criterion (x), and taking account of the need to:

- a) Critically review the selection of the component parts and configurations from the perspective of conservation of biodiversity and threatened species, taking into account species occurrence and abundance, particularly with respect to migratory birds and endemic marine invertebrates, and including

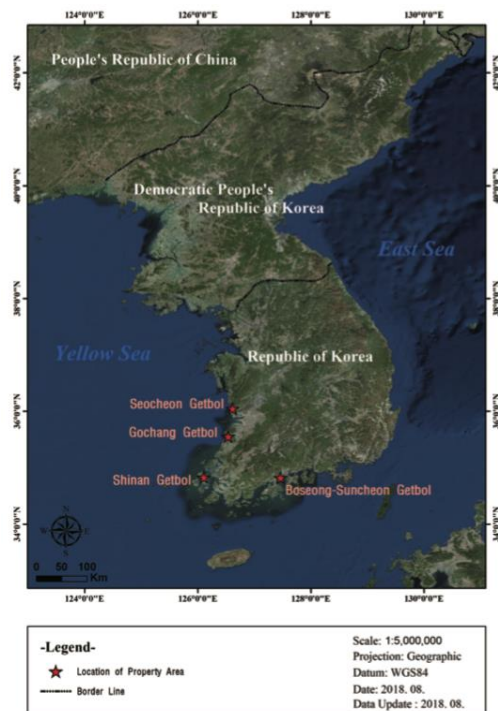
appropriate areas of recognized international conservation significance,

- b) Revise the justification of Outstanding Universal Value in line with a reconfigured nomination focused on criterion (x),
- c) Critically review, for a reconfigured nomination, buffer zone design and effectiveness, expanding proposed buffer zones beyond 100 meters wherever possible, and ensuring that buffer zone regimes mitigate the potential impact of activities in areas surrounding the nominated property,
- d) Further develop the integrated management plan for a reconfigured nomination, with an increased emphasis on the protection and management of biodiversity and threatened species;

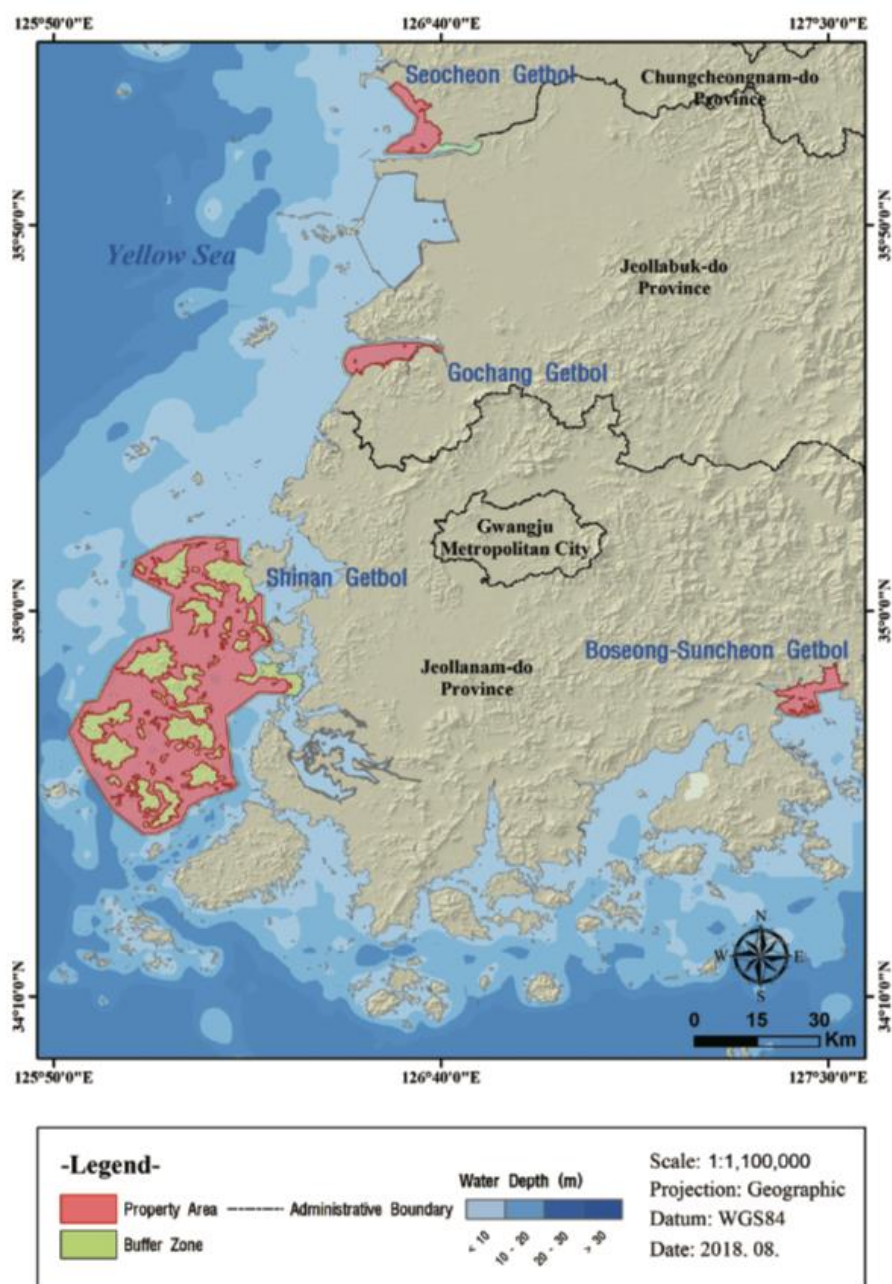
3. Requests the State Party to indicate in the new nomination its intentions regarding further phases of extension, through a clearly defined and timetabled approach, envisioning the incorporation of more critical habitats within the Eastern Asian-Australasian Flyway;

4. Expresses its appreciation of the extensive efforts to date regarding this nomination process, including the contributions at all levels, especially with local communities, and encourages the State Party to build on this investment in completing a revised and updated dossier;

5. Also encourages the State Party, further to Decision **43 COM 8B.3**, to further strengthen collaboration with other concerned States Parties to improve the conservation of critical habitats within the Eastern Asian-Australasian Flyway in relation to potential future transnational serial nominations, and/or extensions and, in particular, to coordinate with the State Party of China in relation to the anticipated Phase II nomination for Migratory Bird Sanctuaries Along the Coast of Yellow Sea-Bohai Gulf of China, potentially through the 2007 Korea-China Agreement on the Protection of Migratory Birds.



Map 1: Location of the nominated property



Map 2: Nominated property and buffer zone