

Key Habitats
for
Waterbirds
and
Seabirds in Korea

한국의 주요 물새류 서식지



Ministry of Environment

National Institute of
Biological Resources

Key Habitats for Waterbirds and Seabirds in Korea

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Importance of waterbirds

Waterbirds, which include a diverse group of over 30 families, are ecologically dependent on wetlands. The wetland ecosystem is susceptible to anthropogenic land-use change and climate change. The world's wetland area has decreased by approximately 35% since the 18th century. As the need to monitor and manage the wetland ecosystem has increased, waterbirds have served as a useful biological indicator. As top predators, waterbirds respond to environmental changes at lower trophic levels, and different waterbirds have distinct habitat requirements. Such traits enable the detection and measurement of change in wetland ecosystems by monitoring waterbird populations and communities. Many waterbird species are easily counted and have been long used for environmental monitoring. Therefore, waterbirds are also a suitable indicator of long-term changes in the ecosystem. In addition, contaminants accumulated throughout the food chain can be measured in waterbirds by non-invasive analysis of feathers and eggshells, which is useful for monitoring contamination of wetlands. However, 17% of the world's waterbird species are considered globally threatened, and 55% are declining due to loss of wetland habitat, overexploitation, and other threats. Waterbirds themselves play a key functional role in maintaining the health and diversity of wetland ecosystems through nutrient cycling, pest control, and seed dispersal. In conservation frameworks, large waterbirds or colonial waterbirds are flagship umbrella species that serve to increase awareness of conservation that can help preserve a wide range of co-occurring species. Therefore, identifying important habitat for waterbirds and monitoring their populations is a cornerstone of systematic conservation and management.





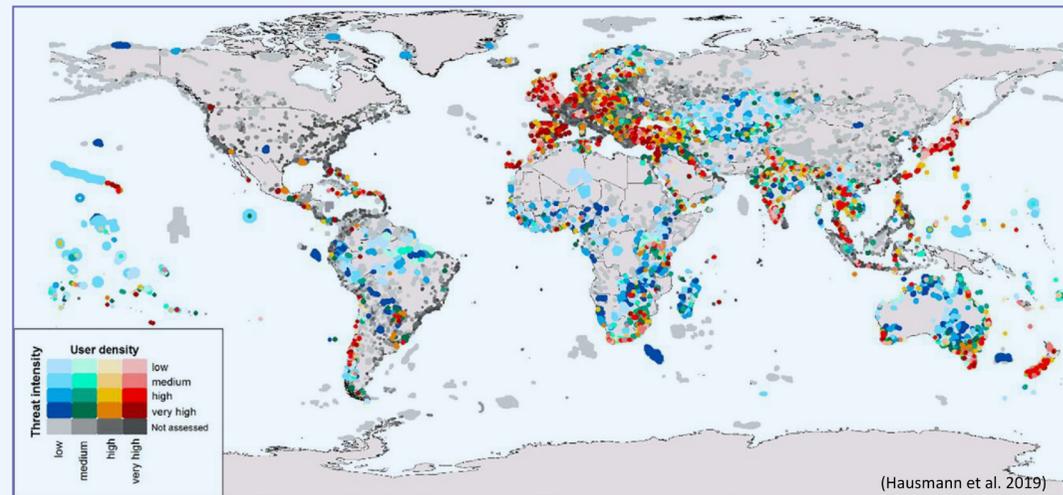
Key waterbirds in Korea

In South Korea, the major groups of birds dependent upon wetlands and the marine environment are Gaviidae (loons), Podicipedidae (grebes), Procellariidae (petrels and shearwaters), Hydrobatidae (storm petrels), Phalacrocoracida (cormorants), Anatidae (ducks, geese, and swans), Ardeidae (egrets), Ciconiidae (storks), Threskiornithidae (spoonbills), Rallidae (rails), Gruidae (cranes), Scolopacidae (sandpipers), Charadriidae (plovers), Laridae (gulls), Sternidae (terns), and Alcidae (auks). Key habitat types include inland wetlands, coastal wetlands, and uninhabited islands. Along the Yellow Sea Coast, intertidal mudflats are a stopover site that supports many shorebirds in the East Asian–Australasian Flyway, such as critically endangered Spoon-billed Sandpipers and Nordmann’s Greenshanks. However, this area has been seriously threatened by coastal reclamation and development. Inland wetlands provide wintering habitat for groups of ducks, geese, and swans. In particular, most of the global population of Baikal Teals overwinters on large reclamation lakes and farmlands in Korea. Many endangered cranes, including Red-crowned Cranes, Hooded Cranes, and White-naped Cranes, mainly depend on rice paddies during their migration and wintering seasons. During the breeding season, egrets, rails, and some shorebirds species rely on rice paddies and streams, and various species such as cormorants and grebes feed on inland wetlands. Uninhabited islands are important breeding sites for colonial waterbirds and seabirds such as gulls, cormorants, spoonbills, murrelets, shearwaters, and storm petrels. Endangered Black-faced Spoonbills mostly breed on uninhabited islets along the Yellow Sea Coast. Although Chilbaldo Island, Guguldo Island, Dokdo Island, and Sasudo Island are established breeding sites of murrelets, shearwaters, and storm petrels, quantitative estimates of their breeding population are scarce, and other seabird colonies have yet to be documented.



The Important Bird and Biodiversity Area (IBA)

Birdlife International, an international conservation organization, began to identify and list important habitats for bird conservation in the late 1970s and called the selected sites Important Bird Areas (IBAs). In 2014, IBAs were renamed “Important Bird and Biodiversity Areas” to emphasize birds’ role as an indicator species representing a rapid decline in biodiversity and as an umbrella species preserving other biodiversity. IBAs are identified using an internationally agreed-upon set of standardized criteria. To date, Birdlife International has documented more than 13,000 IBAs in over 200 countries worldwide. The IBA program aims to build the network that connects breeding, wintering, and staging sites of key species and communities and to develop practical preservation and conservation strategies. Since 2016, the IBA system has been linked to a new Key Biodiversity Area program launched by 13 nature conservation organization including the IUCN council to secure important sites for global biodiversity conservation. Forty IBAs in South Korea were documented in 2004; all were inland and coastal wetlands, and uninhabited islands used as breeding sites of colonial waterbirds, except for Gwangneung Forest (KR011).



Global distribution of IBAs and potential pressure at IBA sites

IBA criteria

IBA criteria are based on recent knowledge of the status and trends of bird populations, which ensures that the sites designated as IBAs have significance for bird population conservation and to enable comparisons between sites at regional and global levels. IBA criteria consist of global and regional IBA criteria.

Global IBA criteria

- **A1:** The site is known or thought to regularly hold a significant number of species categorized as globally threatened on the IUCN Red List (Critically Endangered, Endangered, or Vulnerable).
- **A2:** The site is known or thought to regularly hold $\geq 1\%$ of the global population of at least two restricted-range species with a global range size $\leq 50,000$ km².
- **A3:** The site is known or thought to hold 30% of the number of bioregion-restricted species within a biome-realm within a country or five bioregion-restricted species.
- **A4:** The site is known or thought to hold $\geq 1\%$ of the global population of one or more species.

Regional IBA criteria

- **B1a:** The site regularly holds significant number of a near threatened species on the IUCN Red List.
- **B3a:** The site is known or thought to hold regularly $\geq 1\%$ of a biogeographic population. The Ramsar definition of “biogeographic population” is used.
- **B3b:** The site is known or thought to regularly hold $\geq 20,000$ waterbirds or $\geq 6,700$ pairs of seabirds of one or more species.

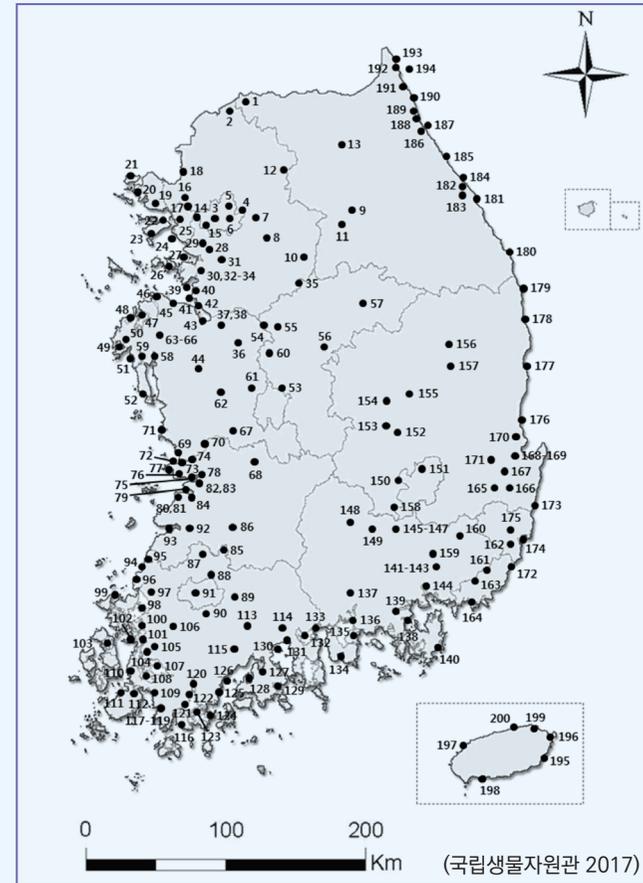




Monitoring waterbirds and seabirds in Korea

In South Korea, several systematic monitoring datasets of waterbird and seabird populations have been collected. Wintering bird censuses and shorebird surveys are examples of representative monitoring. The wintering bird census is a national-wide monitoring census, and every year, this bird count is conducted in natural and artificial wetlands across South Korea. The number of monitoring sites was 69 in the first census in 1999 and has increased, with more than 200 sites counted since 2014. The shorebird survey, initiated in 2001, tracks trends in migratory shorebirds using the Yellow Sea region of South Korea as a staging area. This survey has been conducted during the bird migration season, spring and fall, at 20 intertidal mudflats along the West and South Coast of South Korea since 2015. In addition, there are other irregular surveys of wetlands and key bird habitats designated as protected areas such as national parks and national monuments, and on specific islands. Therefore, seabird breeding population data are available only from irregular surveys in designated protected areas.

According to the guidelines for the application of the IBA criteria, estimates of bird populations should ideally be based on recent field counts (8–10 years). Therefore, this study used data from wintering bird censuses conducted in January from 2011–2020 and spring and fall data from shorebird surveys conducted from 2010–2019. Due to the lack of quantitative and reliable information on population size of breeding seabirds, we reviewed all available literature and used the most up-to-date data whenever possible.



Monitoring sites for the nationwide wintering bird census (200 sites in 2016–2017)



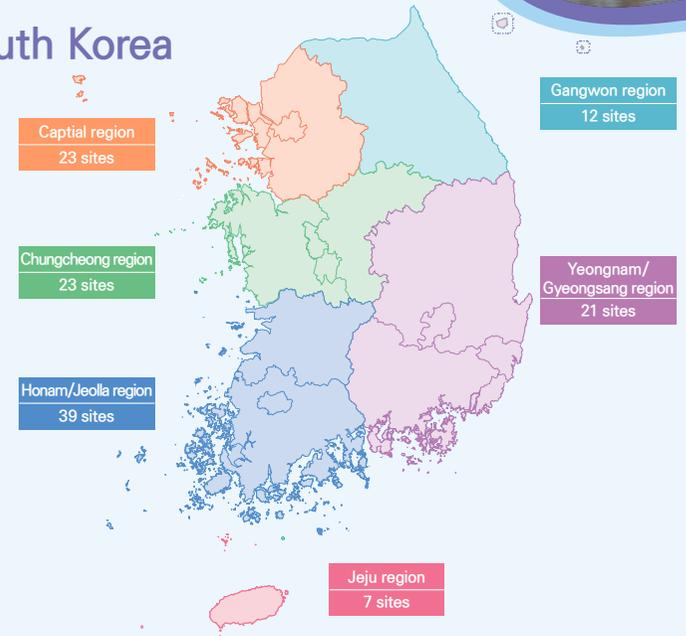


Key habitats for waterbirds and seabirds in South Korea

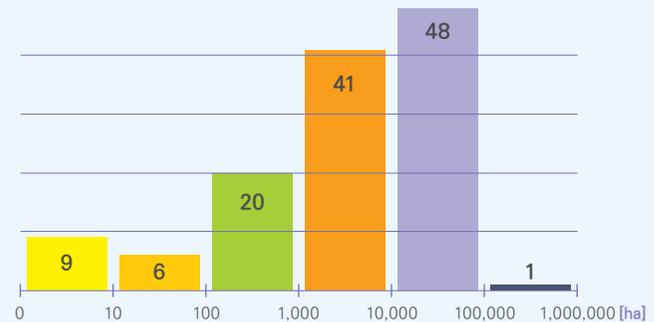
A total of 125 key habitats have been identified as key habitat for waterbirds and seabirds under IBA criteria, with a total area of 1,566,685.2 ha. This is a significant increase from 137,140 ha across 40 IBAs identified in 2004. Of the 125 key habitats, 29 sites meet the global IBA criteria, 65 sites meet both the global IBA criteria and regional IBA criteria, and 31 sites meet only the regional IBA criteria.

Key habitat for waterbirds and seabirds appears to be clustered on the west coast of South Korea. There is relatively little key habitat, including some parts of the Han River, Guem River, and Nakdong River, in eastern and inland regions. Based on the regional distribution of key habitat, sites are most clustered in the Honam/Jeolla region with 39 sites. There are 23 sites in the Capital area and Chungcheong region, respectively, 21 sites from the Yeongnam/Gyeongsang region, 12 sites from the Ganwon region, and seven sites from the Jeju region.

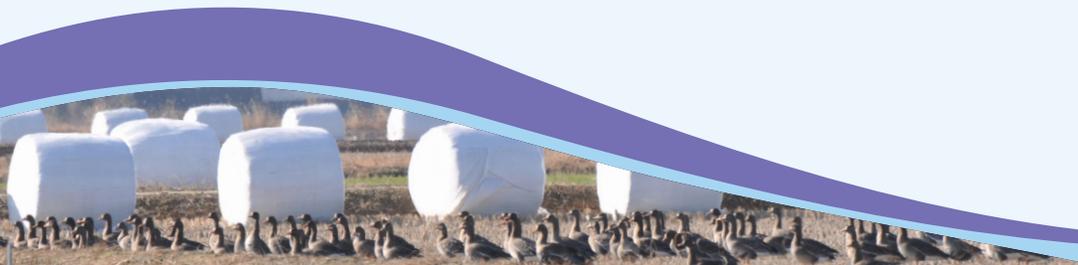
The average area of key habitats is 12,336 ha, and 103 of the 125 sites (82.4%) cover a small area less than 25,000 ha. The key habitat with the smallest size was the Bido & Sukdo Islands in Ganghwa-gun in Incheon City (0.4 ha), and key habitat on the Ulsan-Guryoungpo Coast in Ulsan city and the Gyeongbuk region covers the most extensive area, with 134,657.7 ha.



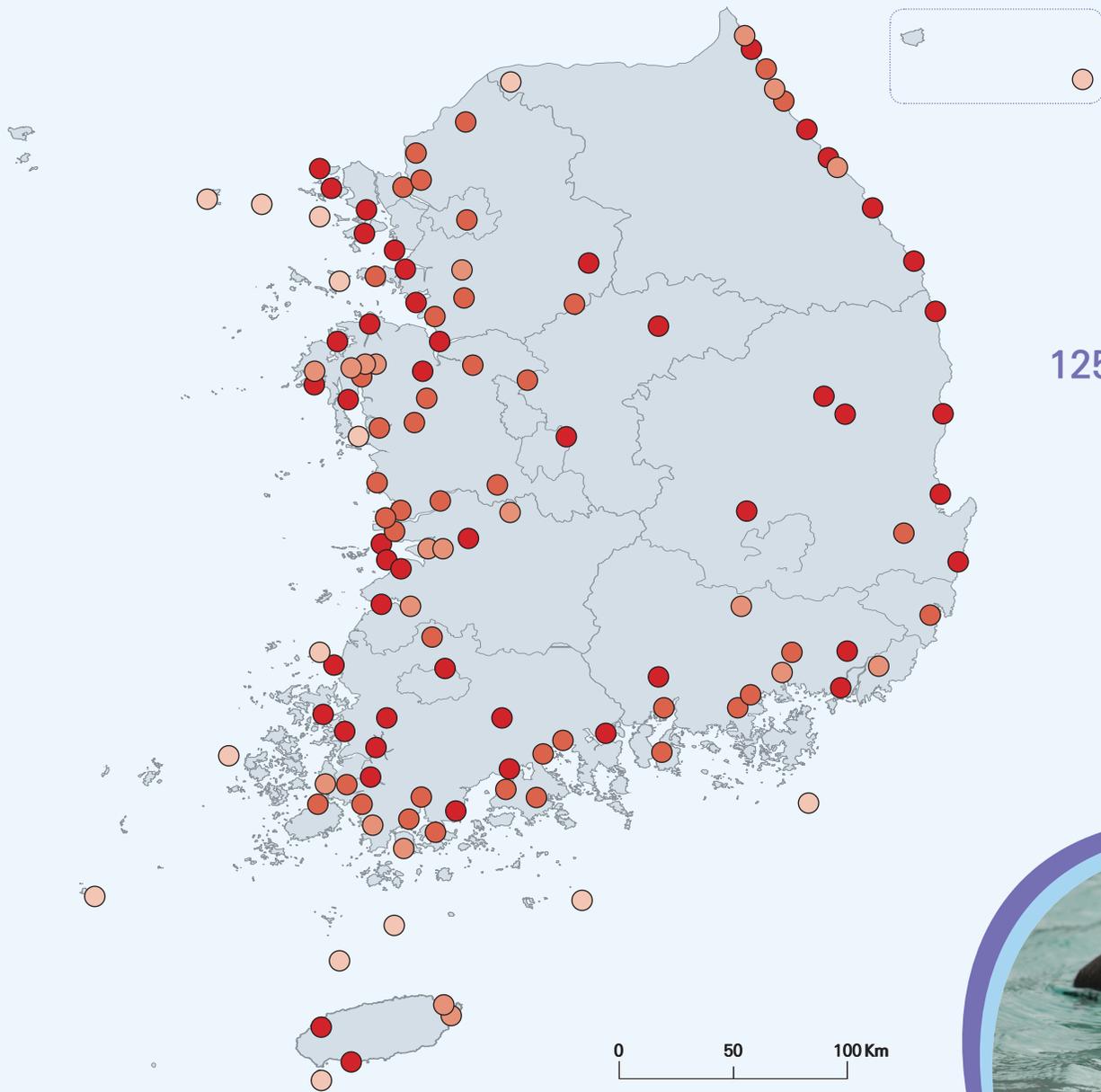
The number of key habitats by region



The number of key habitats by area







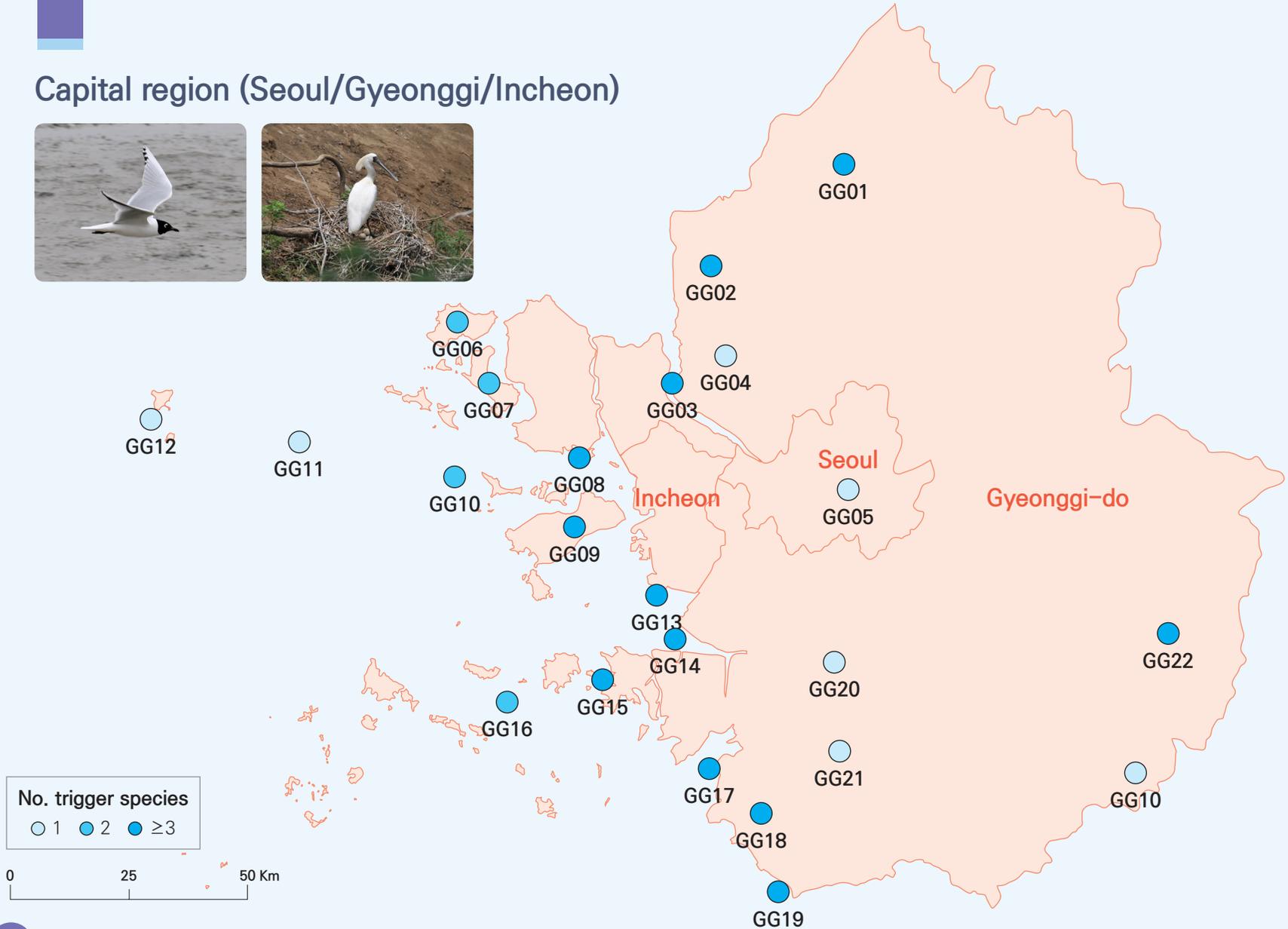
Distribution of 125 key waterbird habitats in South Korea

Habitat area(ha)

- <100
- 100 to 999
- 1,000 to 9,999
- 10,000 to 149,999



Capital region (Seoul/Gyeonggi/Incheon)



Key habitats in the Captial region (Seoul/Gyeonggi/Incheon) and their conservation/management priority

ID	Site	Area (ha)	Latitude	Longitude	IBA criteria	No. trigger species	IBA (2004)	EAAFP FNS	Ramsar site	Priority
GG01	Yeoncheon	7,303.2	38.081	127.023	A1, A4, B3a	3	KR012			UR
GG02	Imjin river	6,819.7	37.887	126.769	A1, A4, B3a	4	KR002			UR
GG03	Han River Estuary	5,672.9	37.709	126.672	A1, B3a, B3b	4	KR004	EAAF028 EAAF143		UR
GG04	Gongneungcheon Stream	5,212.1	37.737	126.781	B3a	1				UR
GG05	Han river	6,706.9	37.529	126.960	A1	1	KR001		2050	UR
GG06	Gyodongdo Island	11,590.1	37.786	126.266	A1, B3a	2				UR
GG07	Seokmodo Island	11,470.7	37.696	126.325	A1, B3a	2				HI
GG08	Southern Ganghwado Tidal Flat	13,494.5	37.606	126.470	A1, A4, B1, B3a	13	KR006			CR
GG09	Yeongjongdo Tidal Flat	13,498.8	37.454	126.506	A1, B1, A4, B3a, B3b	11	KR005, KR006			CR
GG10	Seomando and Dongmando Islands	9.2	37.553	126.263	A1, A4	2				HI
GG11	Bido and Seokdo Islands	0.4	37.605	125.964	A1, A4	1				LP
GG12	Gujido Island	5.0	37.638	125.682	A1	1				UR
GG13	Songdo Tidal Flat	37,961.9	37.370	126.648	A1, A4, B1, B3a, B3b	9	KR019	EAAF145	2209	CR
GG14	Sihwa Lake	13,359.5	37.285	126.688	A1, B1, B3a	13	KR009			CR
GG15	Daebudo and Yeongheungdo Islands	9,665.9	37.217	126.564	A1, B1, B3a	7	KR008	EAAF148		UR
GG16	Hwangseodo Island	3.6	37.210	126.363	A1, A4	2				UR
GG17	Namyang Bay	21,433.5	37.105	126.749	A1, A4, B1, B3a, B3b	16	KR010	EAAF142		UR
GG18	Namyang Lake	9,767.7	37.041	126.846	A1, B3a	3				UR
GG19	Asan Bay	26,494.2	36.917	126.856	A1, A4, B1, B3a, B3b	13	KR017			UR
GG20	Seoho Reservoir	322.6	37.271	126.990	B3a	1				HI
GG21	Hwanggucheon Stream	1,643.5	37.131	127.000	A1	1				HI
GG22	Lower Namhan River	25,046.9	34.389	127.628	A1, B1, B3a	4				UR
GG23	Cheongmicheon Stream	3,937.5	37.097	127.566	B3a	1				HI

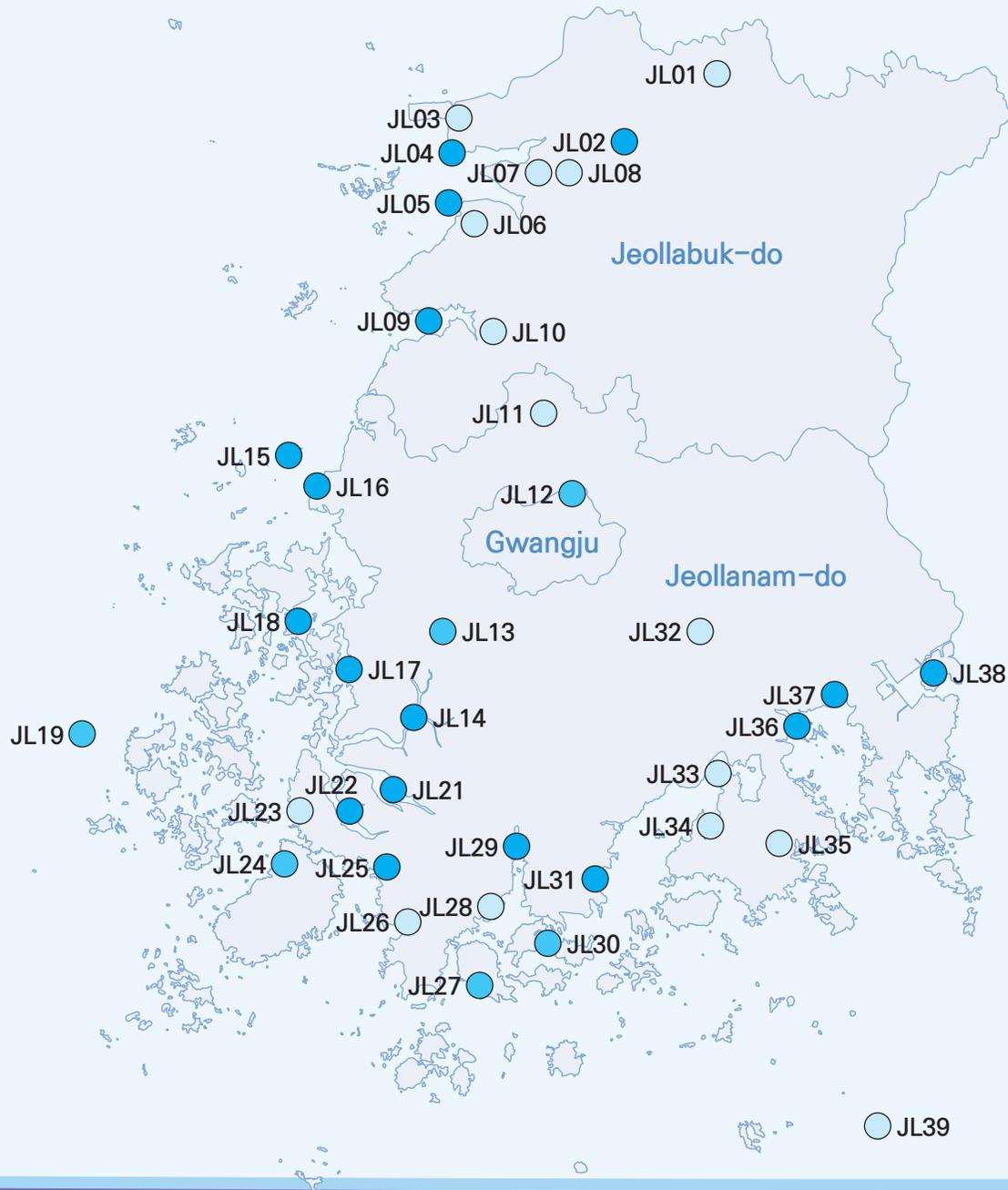
Chungcheong region



Key habitats in the Chungcheong region and their conservation/management priority

ID	Site	Area (ha)	Latitude	Longitude	IBA criteria	No. trigger species	IBA (2004)	EAAFP FNS	Ramsar site	Priority
CC01	Chungju Lake	24,448.6	36.987	127.996	A1	1				HI
CC02	Daecheong Lake	25,590.0	36.426	127.525	A1, B3a	2				HI
CC03	Byeongcheoncheon Stream	7,942.2	36.710	127.325	B3a	1				HI
CC04	Gokgyocheon Stream	3,754.6	36.790	127.049	B3a	1				HI
CC05	Sapgyocheon Stream	10,590.0	36.749	126.784	B3a	2				UR
CC06	Dangjin Coast	34,115.9	36.980	126.490	A1, B3a	3				UR
CC07	Garirim Bay	38,333.5	36.897	126.352	A1,B1, B3a	7				UR
CC08	Taeon Coast	52,775.2	36.697	126.260	A1, A4, B1, B3a, B3b	13			1724	UR
CC09	Suryong Reservoir	118.6	36.753	126.234	A1	1				HI
CC10	Pungjeon Reservoir	234.9	36.775	126.424	A1	1				HI
CC11	Jamhong Reservoir	359.3	36.786	126.487	B3a	1				HI
CC12	Seong-am Reservoir	428.9	36.783	126.535	B3a	1				HI
CC13	Haemicheon Stream	3,833.3	36.722	126.487	B3a	1				UR
CC14	Cheonsu Bay	21,349.2	36.393	126.616	A1, A4, B1, B3a, B3b	19	KR018	EAAF046		UR
CC15	Yedang Reservoir	2,500.4	36.616	126.804	A1, B3a	2				UR
CC16	Muhancheon Stream	1,488.6	36.499	126.750	A1	1				HI
CC17	Boryeong Lake	3,658.0	36.465	126.565	A1, B1	2				UR
CC18	Mokdo Island	0.8	36.418	126.464	A1	1				UR
CC19	Busa Lake	3,404.1	36.187	126.554	A1, B3a	2				UR
CC20	Yubudo Island	1,442.4	35.007	126.593	A1, A4, B1, B3a, B3b	18	KR020	EAAF101	1925	UR
CC21	Geum River Estuary and Janghang Coast	6,927.9	36.998	126.704	A1, A4, B1, B3a, B3b	21	KR019	EAAF100	1925	UR
CC22	Geum River	5,261.2	36.089	126.870	A1, B3a, B3b	3	KR019			UR
CC23	Tapjeong Reservoir	1,320.4	36.179	127.173	A1	1				HI

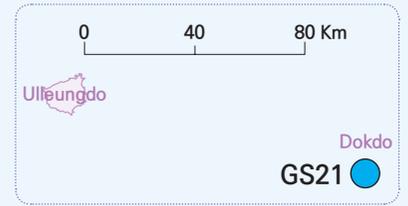
Honam/Jeolla region



Key habitats in the Honam/Jeonlla region and their conservation/management priority

ID	Site	Area (ha)	Latitude	Longitude	IBA criteria	No. trigger species	IBA (2004)	EAAF FNS	Ramsar site	Priority
JL01	Gyeongcheon Reservoir	561.2	36.031	127.233	A1	1				HI
JL02	Lower Mangyeong River	38,463.6	35.900	127.027	A1, B1, B3a, B3b	8				UR
JL03	Okgu Reservoir	7,194.5	35.930	126.658	A1	1				HI
JL04	Mangyeong River Estuary	25,338.8	35.888	126.708	A1, B1, B3a	12	KR021			CR
JL05	Dongjin River Estuary	23,183.8	35.808	126.701	A1, B1, B3a	9	KR022			CR
JL06	Cheongho Reservoir	11,834.3	35.741	126.663	B3a	1				HI
JL07	Neungje Reservoir	580.3	35.846	126.827	A1	1				HI
JL08	Baeksanji Reservoir	189.5	35.845	126.896	A1	1				HI
JL09	Gomso Bay	16,534.3	35.564	126.578	A1, A4, B1, B3a, B3b	13				UR
JL10	Donglim Reservoir	264.8	35.547	126.719	B3a, B3b	1	KR023			HI
JL11	Jangseong Lake	3,641.9	35.390	126.842	A1	1				HI
JL12	Upper Yeongsan River	24,761.4	34.827	126.539	B1, B3a	2				UR
JL13	Middle Yeongsan River	19,147.0	34.976	126.609	A1, B1	2				UR
JL14	Yeongsan Lake	33,468.2	34.830	126.549	A1, B1, B3a	6				UR
JL15	Chilsando Island	25.9	35.313	126.262	A1, A4, B3a	4				HI
JL16	Yeonggwang Tidal Flat	28,628.0	35.267	126.346	B1	5	KR024			UR
JL17	Muan-Mokpo Coast	12,434.2	34.880	126.396	A1, B1, B3a	5				UR
JL18	Hampyeong Bay and Aphaedo Island	44,690.5	35.983	126.274	A1, A4, B1, B3a, B3b	19	KR025	EAAF146	1732, 1974	HI
JL19	Chilbaldo Island	3.7	34.783	125.800	A4, B1	2	KR032	EAAF107		UR
JL20	Guguldo Island	2.6	34.067	125.117	A1, A4, B1	3	KR033			CR
JL21	Yeong-am Lake	25,600.8	34.682	126.501	A1, B3a	5	KR027			UR
JL22	Geumho Lake	7,780.3	34.578	126.416	A1, B1, B3a	4	KR028			UR
JL23	Rangcho Reservoir	951.7	34.643	126.290	A1	1				HI
JL24	Gunnae Reclaimed Area	3,052.5	34.549	126.253	A1, B3a	2				UR
JL25	Gocheonam Lake	4,344.6	34.543	126.506	A1, B1, B3a	5	KR029			UR
JL26	Shinbangji Reservoir	183.4	34.433	126.531	A1	1				HI
JL27	Wando Lake	644.9	34.314	126.689	A1, B1	2				UR
JL28	Sanae Reclaimed Area	1,812.7	34.464	126.718	A1	1				HI
JL29	Gangjin Bay	6,129.5	34.611	126.774	A1, B1	3	KR030			UR
JL30	Gogeumdo and Joyakdo Islands	8,854.8	34.378	126.797	A1, B1	2				UR
JL31	Jangheung Coast	20,774.1	34.517	126.961	A1, B1, B3a	3				UR
JL32	Juam Lake	20,555.9	34.977	127.192	A1	1				HI
JL33	Deukryang Bay	28,748.4	34.703	127.231	A1	1				UR
JL34	Goheung Lake	6,178.6	34.578	127.217	A1	1				HI
JL35	Haechang Bay	5,046.6	34.578	127.371	A1	1				HI
JL36	Yeoja Bay	7,518.1	34.803	127.412	A1, A4, B1, B3a	14				HI
JL37	Suncheon Bay	7,204.8	34.878	127.505	A1, B1, A4, B3a, B3b	15	KR031	EAAF079	1594	LP
JL38	Gwangyang Bay	29,977.4	34.892	127.720	A1, B1, B3a	8				UR
JL39	Baekdo Islands	62.2	34.045	127.600	A1, A4	1				HI

Youngnam/Gyeongsang region



No. trigger species
 ○ 1 ● 2 ● ≥3

0 40 80 Km

Key habitats in the Youngnam/Gyeongsang region and their conservation/management priority

ID	Site	Area (ha)	Latitude	Longitude	IBA criteria	No. trigger species	IBA (2004)	EAAFP FNS	Ramsar site	Priority
GS01	Jinyang Lake	12,175.4	35.195	127.996	A1, B1	2				HI
GS02	Sacheon Bay	7,598.3	35.035	128.023	A1, B1	4				UR
GS03	Namhae Coast	8,011.1	34.709	128.016	A1, B1, B3a	3				UR
GS04	Danghang Bay	6,132.0	35.049	128.414	A1, B1	2				UR
GS05	Changpo Bay	1,658.0	35.103	128.467	B1	1				HI
GS06	Bong-am Tidal Flat	129.6	35.215	128.624	A1, B1	2				HI
GS07	Junam Reservoir	1,254.4	35.317	128.672	A1, A4, B1, B3a	5	KR036	EAAF095		HI
GS08	Lower Nakdong River	18,402.6	35.345	128.944	A1, B1, B3a	3				UR
GS09	Nakdong River Estuary	14,339.8	35.178	128.942	A1, A4, B1, B3a	19	KR037	EAAF097		UR
GS10	Hoedong Reservoir	649.1	35.252	129.117	B3a	1				LP
GS11	Hongdo Island	9.8	34.537	128.733	A4, B3a, B3b	1				LP
GS12	Ulsan Bay	6,052.7	35.509	129.372	A1	1				HI
GS13	Ulsan-Guryongpo Coast	134,657.7	35.781	129.527	B3b	5				UR
GS14	Hyeongsan River	6,504.9	35.926	129.246	A1, B1	2				UR
GS15	Pohang-Yeongdeok Coast	54,374.1	36.133	129.427	B3a	1				HI
GS16	Yeongdeok-Pyeonghae Coast	49,948.7	36.542	129.438	B3a	1				HI
GS17	Andong Lake	25,026.7	36.622	128.839	A1, B3a	2				UR
GS18	Imha Lake	16,935.3	36.531	128.956	B1	1				HI
GS19	Gumi-Haepyeong Wetlands	21,114.1	36.106	128.377	B1, B3a	3	KR034	EAAF078		UR
GS20	Upo Swamp	650.1	35.551	128.417	A1, B1, B3a	3	KR035	EAAF096	934	HI
GS21	Dokdo Island	18.8	37.241	131.863	B1	2				UR
GS22	Uljin-Wondeok Coast	18,769.6	37.074	129.404	B3a	1				HI

Gangwon & Jeju regions



Key habitats in the Gangwon region and their conservation/management priority

ID	Site	Area (ha)	Latitude	Longitude	IBA criteria	No. trigger species	IBA (2004)	EAAFP FNS	Ramsar site	Priority
GW01	Wondeok-Samcheok Coast	34,210.6	37.313	129.293	B3a	1				HI
GW02	Samcheok-Gangneung Coast	47,886.0	37.600	129.093	B3a	1				HI
GW03	Gyeongpo Lake	344.9	37.797	128.904	A1	1	KR016			HI
GW04	Gangneung-Jumunjin Coast	10,727.0	37.833	128.898	B1, B3a	3				UR
GW05	Jumunjin-Yangyang Coast	19,733.6	37.997	128.753	B1, B3a	2				UR
GW06	Yangyang-Sokcho Coast	5,788.9	38.158	128.625	B3a	2				UR
GW07	Cheongcho Lake	240.7	38.197	128.588	A1	1				HI
GW08	Sokcho-Ganseong Coast	9,890.1	38.302	128.547	A1, B3a	3				UR
GW09	Hwajinpo Lake	611.1	38.468	127.433	B3a	1	KR014			HI
GW10	Ganseong-Daejin Coast	11,920.9	38.481	128.447	B1, B3a	4				UR
GW11	Cheolwon Basin	67.2	38.274	127.238	A1, A4, B3a, B3b	4	KR013	EAAFP027		UR

Key habitats in the Jeju region and their conservation/management priority

ID	Site	Area (ha)	Latitude	Longitude	IBA criteria	No. trigger species	IBA (2004)	EAAFP FNS	Ramsar site	Priority
JJ01	Hado-ri Wetland	139.9	33.509	126.893	A1	2	KR039			UR
JJ02	Seongsanpo	457.3	33.461	126.921	A1, B1	2	KR040			UR
JJ03	Seogwipo Coast	22,990.6	33.227	126.426	B3a	2				UR
JJ04	Marado Island	30.0	33.118	126.268	A1, A4, B1	3				CR
JJ05	Jeju Coast	33,406.2	33.388	126.278	A1, B1, B3a	3				UR
JJ06	Hwado Island	3.6	33.729	126.358	A4, B1	2				UR
JJ07	Sasudo Island	13.9	33.920	126.639	B1	1				UR

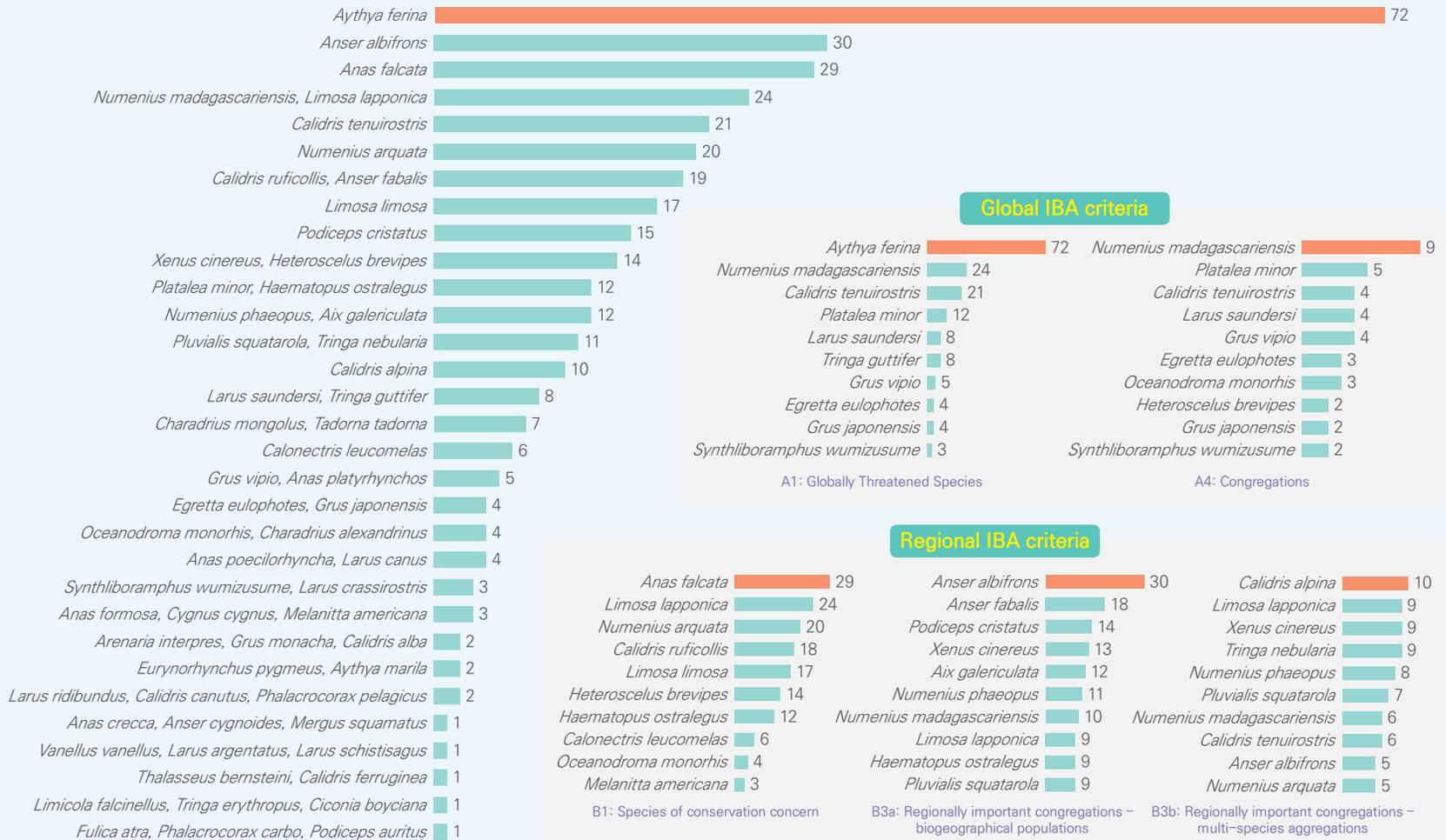


Key trigger species

A total of 60 species have been identified as trigger species in the 125 key habitats for waterbirds and seabirds meeting the IBA criteria. According to the IUCN Red List updated in 2020, two of these species, Spoon-billed Sandpipers and Chinese Crested Terns, are critically endangered, seven others are endangered, eight vulnerable, 13 near-threatened, and the remaining 30 species are of least concern. Common Pochards are a trigger species for identifying most key habitats, with 72 sites meeting the IBA criteria for Common Pochards (A1: 72 sites, B3a: 1 site). The Common Pochard was reevaluated as a vulnerable species (VU) threatened with global extinction in 2015 as the European population decreased by 30–49% over the past 22.8 years. Therefore, sites that regularly hold more than 30 individuals of Common Pochards (A1) or more than 3,000 individuals, 1% of the East Asian population, meet the IBA criteria. Threatened (critically endangered: CR, endangered: EN, vulnerable: VU) or near-threatened (NT) Shorebirds, including Far Eastern Curlews, Bar-tailed Godwits, and Eurasian Oystercatchers triggered many key habitats. In addition, Falcated Ducks, Greater White-fronted Geese, Bean Geese, and Black-faced Spoonbills are also main trigger species.



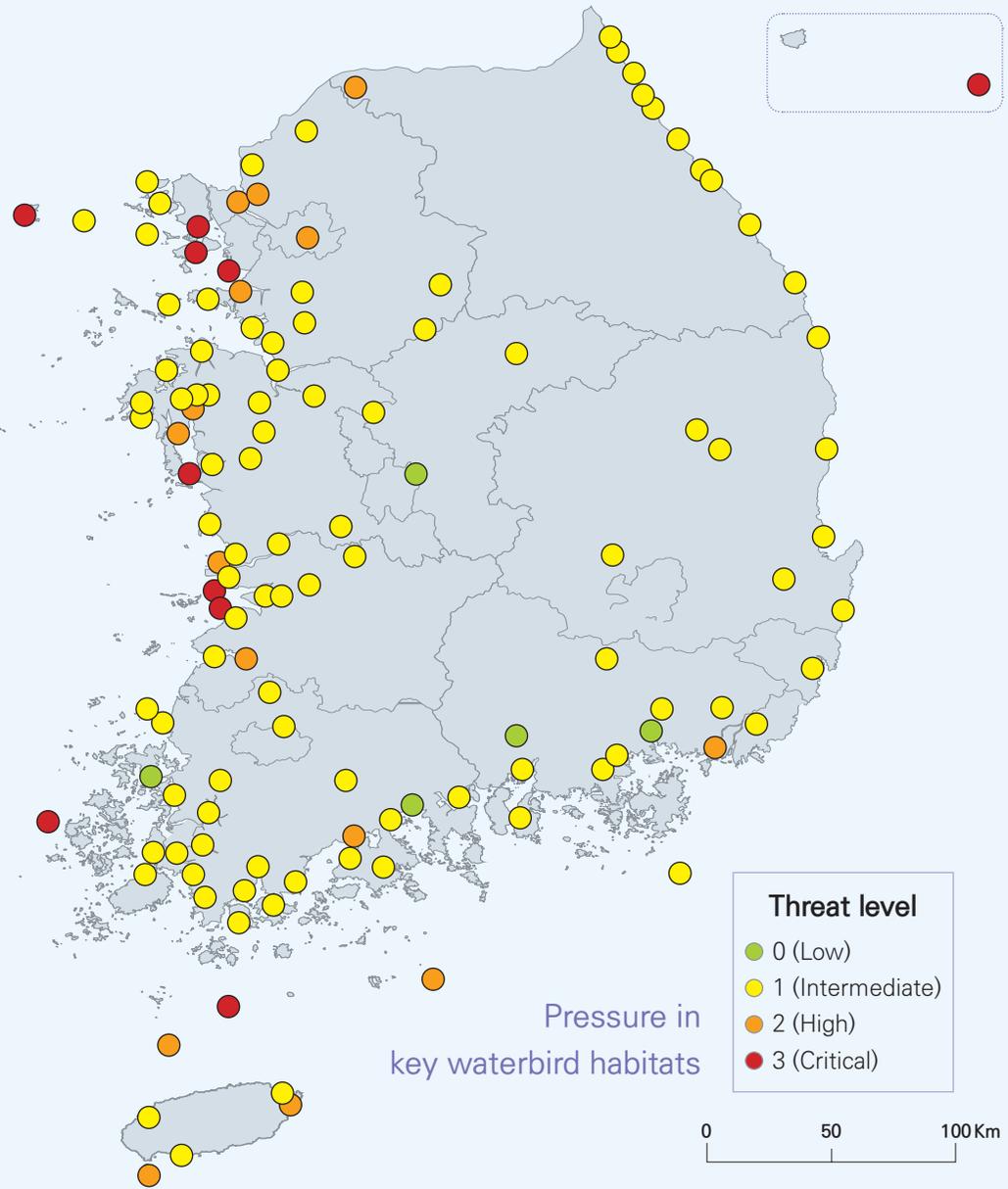
No. of habitats with key trigger species



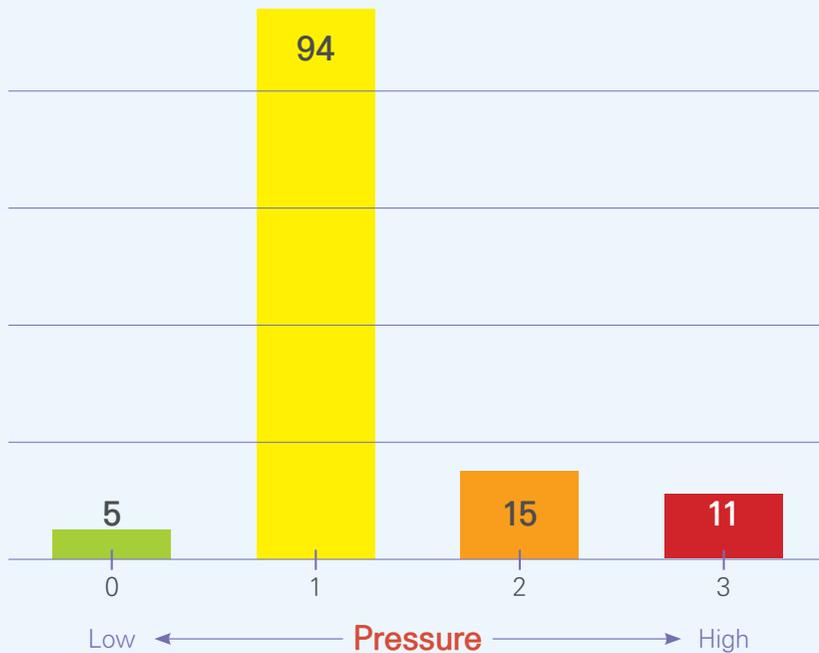


Pressure

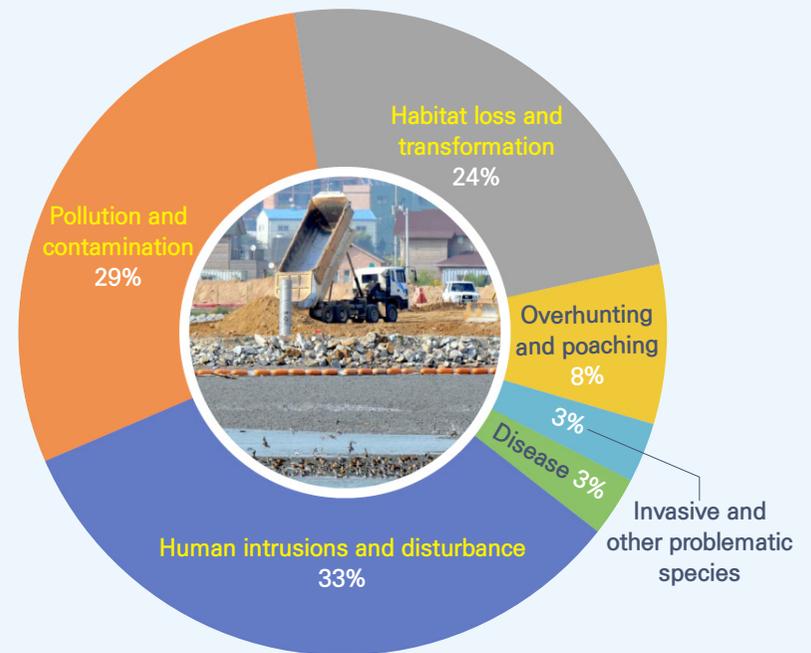
When evaluating the average threat level to 125 key habitats for waterbirds and seabirds using four levels, from low to critical, the overall threat level was slightly above the intermediate level. However, trigger species were critically threatened at 11 sites, the Southern Ganghwado Tidal Flat, Yeongjongdo Tidal Flat, Gujido Island, Songdo Tidal Flat, Mokdo Island, Mangyeong River Estuary, Dongjin River Estuary, Chilbaldo Island, Guguldo Island, Dokdo Island, and Sasudo Island. In addition, a high threat level was identified at 15 sites, including the Han River Estuary, Sihwa Lake, Cheonsu Bay, Yubudo Island, Donglim Reservoir, Beakdo Island, Nakdong River Estuary, Cheolwon Basin, and Marado Island.



'Human intrusions and disturbance' was the most common threat to key habitat, with 93 sites (33%) negatively affected. 'Pollution and contamination' (81 sites, 29%) and 'Habitat loss and transformation' (66 sites, 24%) were the next most frequent threats. In addition, 'Overhunting and poaching' was estimated to be a threat to 21 sites (8%). Other threats, including 'Invasive and other problematic species' and 'Disease' were threats at nine (3%) sites. However, habitat loss and transformation decrease of the available area of habitat, which is likely the most significant direct threat to the decline of waterbird and seabird populations in South Korea.



No. of sites by threat level



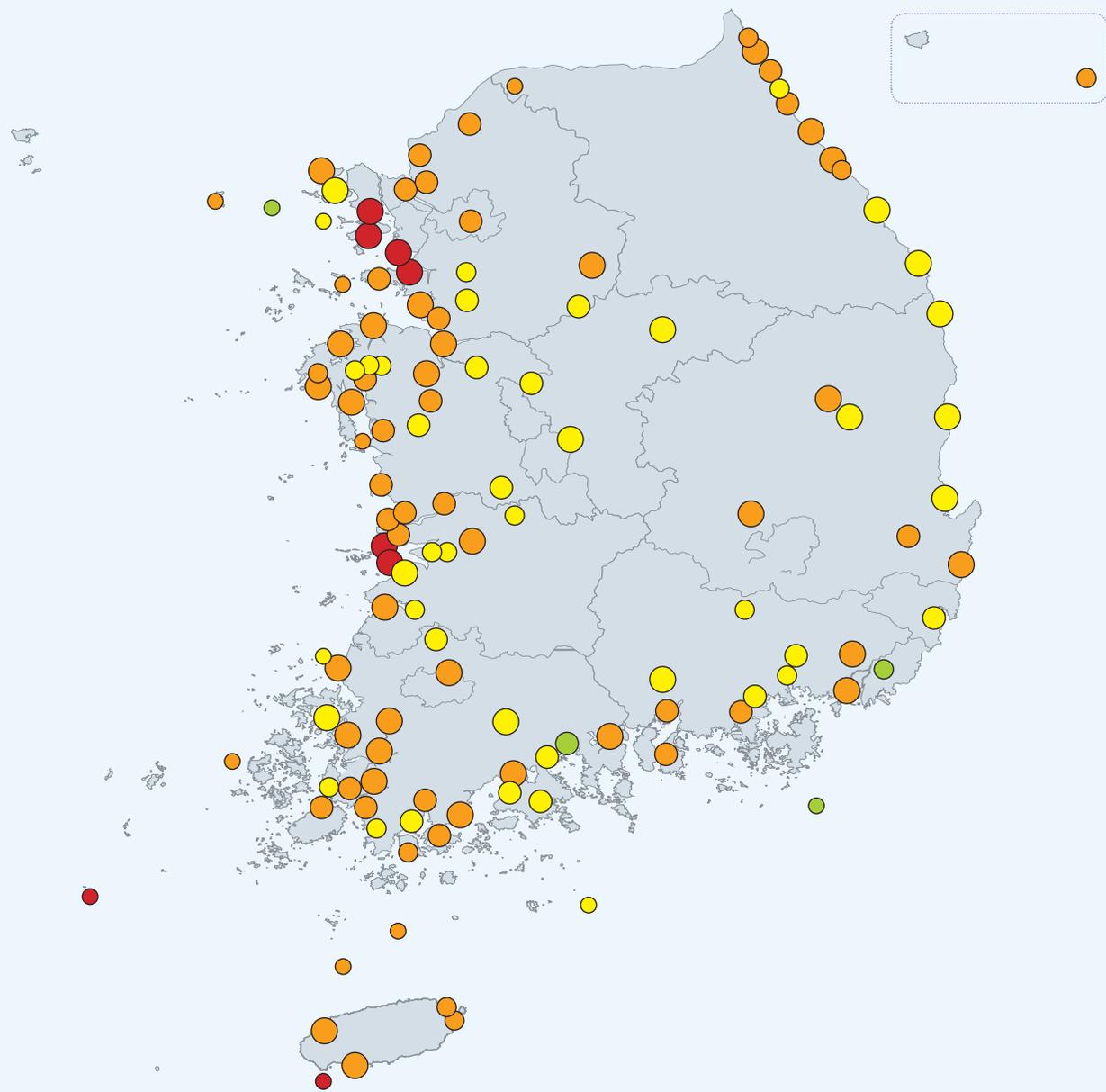
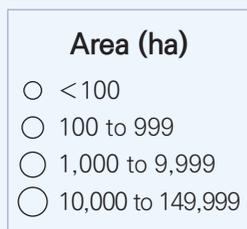
Type of pressure



Conservation and management priorities for key waterbird and seabird habitats

According to the assessment for conservation and management priorities in the identified 125 key habitats, only eight sites (<1 priority score) had no urgent need for management and conservation. In total, 47 areas (37.6%) were in high demand of conservation and management (1–2 priority score), and 66 sites (52.8%) were classified as in urgent need of conservation and management in any way (3–4 priority score). There were eight areas where management was urgent (5–6 priority score), including the Southern Ganghwado Island Tidal Flats, Yeongjongdo Tidal Flats, Songdo Tidal Flats, Sihwa Lake, Mangyeong River Estuary, Dongjin River Estuary, Guguldo Island, and Marado Island. These sites are critical habitat for waterbirds in Korea. Despite the constant threat of human intrusion and disturbance, habitat loss and transformation, and invasive and other problematic species, there are insufficient conservation and management measures in these sites.

ID	Site	IBA criteria	Priority score	Res- ponse	Status	Pres- sure	Main threats
GG08	Southern Ganghwado Island Tidal Flats	A1, A4, B1, B3a	5	1	3	3	Overhunting and poaching, Human intrusions and disturbance
GG09	Yeongjongdo Tidal Flats	A1, B1, A4, B3a, B3b	5	1	3	3	Habitat loss and transformation
GG13	Songdo Tidal Flats	A1, A4, B1, B3a, B3b	5	1	3	3	Habitat loss and transformation, Pollution and contamination, Human intrusions and disturbance, Disease
GG14	Sihwa Lake	A1, B1, B3a	5	0	3	2	Habitat loss and transformation, Pollution and contamination
JL04	Mangyeong River Estuary	A1, B1, B3a	6	0	3	3	Human intrusions and disturbance, Pollution and contamination, Habitat loss and transformation
JL05	Dongjin River Estuary	A1, B1, B3a	6	0	3	3	Pollution and contamination, Habitat loss and transformation
JL20	Guguldo Island	A1, A4, B1	5	1	3	3	Invasive and other problematic species
JJ04	Marado Island	A1, A4, B1	5	0	3	2	Invasive and other problematic species, Human intrusions and disturbance



Trigger species in key waterbird habitats

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
GG01	Yeoncheon	<i>Anser albifrons</i>	LC				✓	
		<i>Grus vipio</i>	VU	✓	✓		✓	
		<i>Grus japonensis</i>	EN	✓	✓		✓	
GG02	Imjin river	<i>Anser fabalis</i>	LC				✓	
		<i>Anser albifrons</i>	LC				✓	
		<i>Grus vipio</i>	VU	✓	✓		✓	
		<i>Grus japonensis</i>	EN	✓			✓	
GG03	Han River Estuary	<i>Anser fabalis</i>	LC				✓	✓
		<i>Anser albifrons</i>	LC				✓	✓
		<i>Aythya ferina</i>	VU	✓				
		<i>Grus vipio</i>	VU	✓				
GG04	Gongneungcheon Stream	<i>Anser albifrons</i>	LC				✓	
GG05	Han river	<i>Aythya ferina</i>	VU	✓				
GG06	Gyodongdo Island	<i>Anser albifrons</i>	LC				✓	
		<i>Platalea minor</i>	EN	✓			✓	
GG07	Seokmodo Island	<i>Anser albifrons</i>	LC				✓	
		<i>Platalea minor</i>	EN	✓			✓	
GG08	Southern Ganghwado Tidal Flat	<i>Anser albifrons</i>	LC				✓	
		<i>Platalea minor</i>	EN	✓	✓		✓	
		<i>Grus japonensis</i>	EN	✓				
		<i>Haematopus ostralegus</i>	NT			✓		
		<i>Pluvialis squatarola</i>	LC				✓	
		<i>Numenius phaeopus</i>	LC				✓	
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	
		<i>Tringa nebularia</i>	LC				✓	
		<i>Xenus cinereus</i>	LC				✓	
		<i>Calidris tenuirostris</i>	EN	✓				

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
GG09	Yeongjongdo Tidal Flat	<i>Calidris ruficollis</i>	NT			✓		
		<i>Limosa limosa</i>	NT			✓	✓	
		<i>Limosa lapponica</i>	NT			✓	✓	
		<i>Aythya ferina</i>	VU	✓				
		<i>Platalea minor</i>	EN	✓				
		<i>Haematopus ostralegus</i>	NT			✓	✓	
		<i>Pluvialis squatarola</i>	LC				✓	
		<i>Numenius phaeopus</i>	LC				✓	✓
		<i>Numenius arquata</i>	NT			✓		✓
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	✓
		<i>Tringa nebularia</i>	LC					✓
		<i>Xenus cinereus</i>	LC				✓	✓
		<i>Calidris tenuirostris</i>	EN	✓				✓
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Calidris alpina</i>	LC					✓
		<i>Limosa limosa</i>	NT			✓		
<i>Limosa lapponica</i>	NT			✓				
GG10	Seomando and Dongmando Islands	<i>Platalea minor</i>	EN	✓	✓		✓	
		<i>Egretta eulophotes</i>	VU	✓	✓		✓	
GG11	Bido and Seokdo Islands	<i>Platalea minor</i>	EN	✓	✓		✓	
GG12	Gujido Island	<i>Platalea minor</i>	EN	✓				
GG13	Songdo Tidal Flat	<i>Aythya ferina</i>	VU	✓				
		<i>Platalea minor</i>	EN	✓	✓		✓	
		<i>Pluvialis squatarola</i>	LC				✓	
		<i>Numenius arquata</i>	NT			✓	✓	✓
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	✓
		<i>Tringa nebularia</i>	LC					✓
		<i>Xenus cinereus</i>	LC					✓
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Calidris ruficollis</i>	NT					✓
<i>Calidris alpina</i>	LC					✓		

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
GG14	Sihwa Lake	<i>Larus saundersi</i>	VU	✓	✓		✓	
		<i>Limosa limosa</i>	NT			✓		
		<i>Limosa lapponica</i>	NT			✓	✓	✓
		<i>Anser fabalis</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Haematopus ostralegus</i>	NT			✓	✓	
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Tringa erythropus</i>	LC				✓	
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Limosa limosa</i>	NT			✓		
		<i>Limosa lapponica</i>	NT			✓		
GG15	Daebudo and Yeongheungdo Islands	<i>Numenius phaeopus</i>	LC				✓	
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	
		<i>Xenus cinereus</i>	LC				✓	
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Limosa lapponica</i>	NT			✓		
GG16	Hwangseodo Island	<i>Platalea minor</i>	EN	✓				
		<i>Egretta eulophotes</i>	VU	✓	✓		✓	
GG17	Namyang Bay	<i>Anser fabalis</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
		<i>Haematopus ostralegus</i>	NT			✓	✓	✓
		<i>Pluvialis squatarola</i>	LC				✓	✓
		<i>Numenius phaeopus</i>	LC				✓	✓
		<i>Numenius arquata</i>	NT			✓	✓	✓
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	✓
<i>Tringa nebularia</i>	LC					✓		

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
		<i>Tringa guttifer</i>	EN	✓				
		<i>Xenus cinereus</i>	LC				✓	✓
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Calidris tenuirostris</i>	EN	✓	✓		✓	✓
		<i>Calidris ruficollis</i>	NT			✓		✓
		<i>Calidris ferruginea</i>	NT			✓		
		<i>Calidris alpina</i>	LC					✓
		<i>Larus saundersi</i>	VU	✓				
		<i>Charadrius mongolus</i>	LC				✓	✓
		<i>Limosa limosa</i>	NT			✓		
		<i>Limosa lapponica</i>	NT			✓	✓	✓
GG18	Namyang Lake	<i>Anser fabalis</i>	LC				✓	
		<i>Anser albifrons</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
GG19	Asan Bay	<i>Aythya ferina</i>	VU	✓				
		<i>Haematopus ostralegus</i>	NT			✓		
		<i>Pluvialis squatarola</i>	LC				✓	✓
		<i>Numenius phaeopus</i>	LC					✓
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	
		<i>Tringa nebularia</i>	LC				✓	✓
		<i>Xenus cinereus</i>	LC				✓	✓
		<i>Calidris tenuirostris</i>	EN	✓			✓	✓
		<i>Calidris canutus</i>	NT			✓		
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Calidris alpina</i>	LC					✓
		<i>Charadrius mongolus</i>	LC				✓	✓
<i>Limosa limosa</i>	NT			✓	✓	✓		
<i>Limosa lapponica</i>	NT			✓	✓	✓		
GG20	Seoho Reservoir	<i>Anser fabalis</i>	LC				✓	
GG21	Hwanggujicheon Stream	<i>Aythya ferina</i>	VU	✓				

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
GG22	Lower Namhan River	<i>Aix galericulata</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Mergus squamatus</i>	EN	✓				
GG23	Cheongmicheon Stream	<i>Aix galericulata</i>	LC				✓	
CC01	Chungju Lake	<i>Aythya ferina</i>	VU	✓				
CC02	Daecheong Lake	<i>Aix galericulata</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
CC03	Byeongcheoncheon Stream	<i>Aix galericulata</i>	LC				✓	
CC04	Gokgyocheon Stream	<i>Aix galericulata</i>	LC				✓	
CC05	Sapgyocheon Stream	<i>Anser albifrons</i>	LC				✓	
		<i>Aix galericulata</i>	LC				✓	
CC06	Dangjin Coast	<i>Anser fabalis</i>	LC				✓	
		<i>Anser albifrons</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
CC07	Garorim Bay	<i>Anser fabalis</i>	LC				✓	
		<i>Anser albifrons</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Numenius phaeopus</i>	LC				✓	
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Limosa limosa</i>	NT			✓		
CC08	Taeon Coast	<i>Anser fabalis</i>	LC		✓		✓	✓
		<i>Anser albifrons</i>	LC				✓	✓
		<i>Anas falcata</i>	NT			✓		
		<i>Anas platyrhynchos</i>	LC					✓
		<i>Anas poecilorhyncha</i>	LC					✓
		<i>Aythya ferina</i>	VU	✓				
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Heteroscelus brevipes</i>	NT			✓		

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Limosa limosa</i>	NT			✓		
		<i>Limosa lapponica</i>	NT			✓		
CC09	Suryong Reservoir	<i>Aythya ferina</i>	VU	✓				
CC10	Pungjeon Reservoir	<i>Aythya ferina</i>	VU	✓				
CC11	Jamhong Reservoir	<i>Anser albifrons</i>	LC				✓	
CC12	Seong-am Reservoir	<i>Anser albifrons</i>	LC				✓	
CC13	Haemicheon Stream	<i>Anser albifrons</i>	LC				✓	
CC14	Cheonsu Bay	<i>Anser fabalis</i>	LC				✓	✓
		<i>Anser albifrons</i>	LC				✓	✓
		<i>Anas falcata</i>	NT			✓		
		<i>Anas platyrhynchos</i>	LC					✓
		<i>Anas poecilorhyncha</i>	LC					✓
		<i>Aythya ferina</i>	VU	✓				
		<i>Ciconia boyciana</i>	EN	✓				
		<i>Grus monacha</i>	VU	✓				
		<i>Haematopus ostralegus</i>	NT			✓	✓	
		<i>Pluvialis squatarola</i>	LC					✓
		<i>Numenius phaeopus</i>	LC				✓	✓
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Tringa nebularia</i>	LC					✓
		<i>Tringa guttifer</i>	EN	✓				
		<i>Xenus cinereus</i>	LC					✓
		<i>Heteroscelus brevipes</i>	NT			✓	✓	✓
		<i>Arenaria interpres</i>	LC					✓
		<i>Calidris tenuirostris</i>	EN	✓	✓		✓	✓
		<i>Calidris ruficollis</i>	NT			✓		
<i>Calidris alpina</i>	LC					✓		
<i>Larus ridibundus</i>	LC					✓		

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria				
				A1	A4	B1	B3a	B3b		
CC15	Yedang Reservoir	<i>Limosa limosa</i>	NT			✓				
		<i>Limosa lapponica</i>	NT			✓	✓	✓		
		<i>Aix galericulata</i>	LC				✓			
CC16	Muhancheon Stream	<i>Aythya ferina</i>	VU	✓						
CC17	Boryeong Lake	<i>Anas falcata</i>	NT			✓				
		<i>Aythya ferina</i>	VU	✓						
CC18	Mokdo Island	<i>Egretta eulophotes</i>	VU	✓						
CC19	Busa Lake	<i>Anser albifrons</i>	LC				✓			
		<i>Aythya ferina</i>	VU	✓						
CC20	Yubudo Island	<i>Haematopus ostralegus</i>	NT			✓	✓	✓		
		<i>Pluvialis squatarola</i>	LC				✓	✓		
		<i>Numenius arquata</i>	NT			✓	✓	✓		
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	✓		
		<i>Tringa guttifer</i>	EN	✓			✓			
		<i>Xenus cinereus</i>	LC				✓	✓		
		<i>Calidris tenuirostris</i>	EN	✓	✓		✓			
		<i>Calidris canutus</i>	NT			✓				
		<i>Calidris alba</i>	LC				✓	✓		
		<i>Calidris ruficollis</i>	NT		✓	✓	✓	✓		
		<i>Calidris alpina</i>	LC				✓	✓		
		<i>Eurynorhynchus pygmeus</i>	CR	✓			✓			
		<i>Limicola falcinellus</i>	LC				✓			
		<i>Larus saundersi</i>	VU	✓						
		<i>Charadrius alexandrinus</i>	LC				✓	✓		
		<i>Charadrius mongolus</i>	LC		✓		✓	✓		
		CC21	Geum River Estuary and Janghang Coast	<i>Limosa limosa</i>	NT			✓		
				<i>Limosa lapponica</i>	NT			✓	✓	✓
<i>Larus saundersi</i>	VU						✓			
<i>Anser cygnoides</i>	VU			✓						
<i>Anser fabalis</i>	LC						✓			

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
		<i>Anser albifrons</i>	LC				✓	
		<i>Tadorna tadorna</i>	LC				✓	✓
		<i>Anas platyrhynchos</i>	LC					✓
		<i>Anas poecilorhyncha</i>	LC					✓
		<i>Aythya ferina</i>	VU	✓				
		<i>Haematopus ostralegus</i>	NT			✓	✓	✓
		<i>Pluvialis squatarola</i>	LC				✓	
		<i>Numenius phaeopus</i>	LC				✓	✓
		<i>Numenius arquata</i>	NT			✓	✓	✓
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	✓
		<i>Tringa nebularia</i>	LC				✓	✓
		<i>Tringa guttifer</i>	EN	✓				
		<i>Xenus cinereus</i>	LC		✓		✓	✓
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Calidris tenuirostris</i>	EN	✓	✓		✓	✓
		<i>Calidris ruficollis</i>	NT			✓		✓
		<i>Calidris alpina</i>	LC				✓	✓
		<i>Larus saundersi</i>	VU	✓	✓		✓	
		<i>Charadrius mongolus</i>	LC				✓	
		<i>Limosa limosa</i>	NT			✓	✓	✓
		<i>Limosa lapponica</i>	NT		✓	✓	✓	✓
CC22	Geum River	<i>Anser albifrons</i>	LC				✓	
		<i>Anas formosa</i>	LC				✓	✓
		<i>Aythya ferina</i>	VU	✓				
CC23	Tapjeong Reservoir	<i>Aythya ferina</i>	VU	✓				
JL01	Gyeongcheon Reservoir	<i>Aythya ferina</i>	VU	✓				
JL02	Lower Mangyeong River	<i>Anser fabalis</i>	LC					✓
		<i>Anser albifrons</i>	LC				✓	✓
		<i>Anas falcata</i>	NT			✓		
		<i>Anas platyrhynchos</i>	LC					✓
		<i>Anas poecilorhyncha</i>	LC					✓

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
		<i>Anas crecca</i>	LC					✓
		<i>Aythya ferina</i>	VU	✓				
		<i>Fulica atra</i>	LC					✓
JL03	Okgu Reservoir	<i>Aythya ferina</i>	VU	✓				
JL04	Mangyeong River Estuary	<i>Anser albifrons</i>	LC				✓	
		<i>Tadorna tadorna</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
		<i>Aythya marila</i>	LC				✓	
		<i>Haematopus ostralegus</i>	NT			✓	✓	
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓			✓	
		<i>Tringa guttifer</i>	EN	✓				
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Limosa limosa</i>	NT			✓		
		<i>Limosa lapponica</i>	NT			✓		
JL05	Dongjin River Estuary	<i>Anser albifrons</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
		<i>Haematopus ostralegus</i>	NT			✓		
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Limosa limosa</i>	NT			✓		
		<i>Limosa lapponica</i>	NT			✓		
JL06	Cheongho Reservoir	<i>Anser albifrons</i>	LC				✓	
JL07	Neungje Reservoir	<i>Aythya ferina</i>	VU	✓				
JL08	Baeksanji Reservoir	<i>Aythya ferina</i>	VU	✓				
JL09	Gomso Bay	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Haematopus ostralegus</i>	NT			✓	✓	

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
		<i>Pluvialis squatarola</i>	LC				✓	✓
		<i>Numenius phaeopus</i>	LC				✓	✓
		<i>Numenius madagascariensis</i>	EN	✓	✓		✓	✓
		<i>Tringa nebularia</i>	LC					✓
		<i>Xenus cinereus</i>	LC				✓	✓
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Calidris tenuirostris</i>	EN	✓				✓
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Calidris alpina</i>	LC					✓
		<i>Charadrius alexandrinus</i>	LC				✓	✓
		<i>Charadrius mongolus</i>	LC					✓
		<i>Limosa lapponica</i>	NT			✓		✓
JL10	Donglim Reservoir	<i>Anas formosa</i>	LC				✓	✓
JL11	Jangseong Lake	<i>Aythya ferina</i>	VU	✓				
JL12	Upper Yeongsan River	<i>Aix galericulata</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
JL13	Middle Yeongsan River	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
JL14	Yeongsan Lake	<i>Anser fabalis</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
		<i>Podiceps cristatus</i>	LC				✓	
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Limosa lapponica</i>	NT			✓		
JL15	Chilsando Island	<i>Platalea minor</i>	EN	✓	✓		✓	
		<i>Egretta eulophotes</i>	VU	✓	✓		✓	
		<i>Larus crassirostris</i>	LC		✓		✓	✓
		<i>Thalasseus bernsteini</i>	CR	✓				
JL16	Yeonggwang Tidal Flat	<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Calidris tenuirostris</i>	EN	✓				

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria			
				A1	A4	B1	B3a	B3b	
JL17	Muan–Mokpo Coast	<i>Calidris ruficollis</i>	NT			✓			
		<i>Limosa lapponica</i>	NT			✓			
		<i>Anser fabalis</i>	LC					✓	
		<i>Tadorna tadorna</i>	LC					✓	
		<i>Anas falcata</i>	NT			✓			
		<i>Aythya ferina</i>	VU	✓					
		<i>Vanellus vanellus</i>	NT			✓			
JL18	Hampyeong Bay and Aphaedo Island	<i>Tadorna tadorna</i>	LC					✓	
		<i>Anas falcata</i>	NT			✓			
		<i>Aythya ferina</i>	VU	✓					
		<i>Haematopus ostralegus</i>	NT			✓		✓	
		<i>Pluvialis squatarola</i>	LC					✓	✓
		<i>Numenius phaeopus</i>	LC					✓	✓
		<i>Numenius arquata</i>	NT			✓			
		<i>Numenius madagascariensis</i>	EN	✓					
		<i>Tringa nebularia</i>	LC					✓	✓
		<i>Xenus cinereus</i>	LC					✓	✓
		<i>Heteroscelus brevipes</i>	NT		✓	✓		✓	
		<i>Arenaria interpres</i>	LC					✓	✓
		<i>Calidris tenuirostris</i>	EN	✓					
		<i>Calidris ruficollis</i>	NT			✓			✓
		<i>Calidris alpina</i>	LC					✓	✓
		<i>Charadrius alexandrinus</i>	LC			✓			✓
		<i>Charadrius mongolus</i>	LC					✓	✓
		<i>Limosa limosa</i>	NT			✓			
		<i>Limosa lapponica</i>	NT			✓		✓	✓
		JL19	Chilbaldo Island	<i>Calonectris leucomelas</i>	NT			✓	
<i>Oceanodroma monorhis</i>	NT				✓	✓	✓		
JL20	Guguldo Island	<i>Calonectris leucomelas</i>	NT			✓			
		<i>Oceanodroma monorhis</i>	NT		✓	✓	✓		
		<i>Synthliboramphus wumizusume</i>	VU	✓					

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
JL21	Yeong-am Lake	<i>Anser fabalis</i>	LC				✓	
		<i>Anser albifrons</i>	LC				✓	
		<i>Anas formosa</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
		<i>Podiceps cristatus</i>	LC				✓	
JL22	Geumho Lake	<i>Anser fabalis</i>	LC				✓	
		<i>Anser albifrons</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
JL23	Rangcho Reservoir	<i>Aythya ferina</i>	VU	✓				
JL24	Gunnae Reclaimed Area	<i>Anser albifrons</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
JL25	Gocheonam Lake	<i>Anser albifrons</i>	LC				✓	
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Limosa lapponica</i>	NT			✓		
JL26	Shinbangji Reservoir	<i>Aythya ferina</i>	VU	✓				
JL27	Wando Lake	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
JL28	Sanae Reclaimed Area	<i>Aythya ferina</i>	VU	✓				
JL29	Gangjin Bay	<i>Numenius madagascariensis</i>	EN	✓				
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Limosa lapponica</i>	NT			✓		
JL30	Gogeumdo and Joyakdo Islands	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
JL31	Jangheung Coast	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓			✓	
JL32	Juam Lake	<i>Aythya ferina</i>	VU	✓				
JL33	Deukryang Bay	<i>Aythya ferina</i>	VU	✓				
JL34	Goheung Lake	<i>Aythya ferina</i>	VU	✓				

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
JL35	Haechang Bay	<i>Aythya ferina</i>	VU	✓				
JL36	Yeoja Bay	<i>Tadorna tadorna</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
		<i>Numenius phaeopus</i>	LC				✓	
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Tringa nebularia</i>	LC				✓	
		<i>Tringa guttifer</i>	EN	✓				
		<i>Xenus cinereus</i>	LC				✓	
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Larus saundersi</i>	VU	✓	✓		✓	
		<i>Limosa limosa</i>	NT			✓		
		<i>Limosa lapponica</i>	NT			✓		
JL37	Suncheon Bay	<i>Anser albifrons</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
		<i>Grus monacha</i>	VU	✓	✓		✓	
		<i>Pluvialis squatarola</i>	LC					✓
		<i>Numenius phaeopus</i>	LC				✓	✓
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Tringa nebularia</i>	LC				✓	✓
		<i>Tringa guttifer</i>	EN	✓			✓	
		<i>Xenus cinereus</i>	LC				✓	✓
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Calidris alpina</i>	LC					✓
		<i>Larus saundersi</i>	VU	✓	✓		✓	
		<i>Limosa limosa</i>	NT			✓	✓	✓

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
JL38	Gwangyang Bay	<i>Limosa lapponica</i>	NT			✓	✓	✓
		<i>Tadorna tadorna</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Numenius arquata</i>	NT			✓		
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Larus saundersi</i>	VU	✓				
JL39	Baekdo Islands	<i>Limosa lapponica</i>	NT			✓		
		<i>Synthliboramphus wumizusume</i>	VU	✓	✓		✓	
GS01	Jinyang Lake	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
GS02	Sacheon Bay	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Limosa lapponica</i>	NT			✓		
GS03	Namhae Coast	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Aythya marila</i>	LC				✓	
GS04	Danghang Bay	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
GS05	Changpo Bay	<i>Heteroscelus brevipes</i>	NT			✓		
GS06	Bong-am Tidal Flat	<i>Aythya ferina</i>	VU	✓				
		<i>Heteroscelus brevipes</i>	NT			✓		
GS07	Junam Reservoir	<i>Anser fabalis</i>	LC				✓	
		<i>Cygnus cygnus</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Phalacrocorax carbo</i>	LC					✓
		<i>Grus vipio</i>	VU	✓	✓			✓

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
GS08	Lower Nakdong River	<i>Cygnus cygnus</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
GS09	Nakdong River Estuary	<i>Anser fabalis</i>	LC				✓	
		<i>Cygnus cygnus</i>	LC				✓	
		<i>Tadorna tadorna</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
		<i>Podiceps cristatus</i>	LC				✓	
		<i>Numenius arquata</i>	NT			✓	✓	
		<i>Numenius madagascariensis</i>	EN	✓				
		<i>Tringa guttifer</i>	EN	✓				
		<i>Xenus cinereus</i>	LC				✓	
		<i>Heteroscelus brevipes</i>	NT			✓		
		<i>Calidris tenuirostris</i>	EN	✓				
		<i>Calidris alba</i>	LC				✓	
		<i>Calidris ruficollis</i>	NT			✓		
		<i>Eurynorhynchus pygmeus</i>	CR	✓				
		<i>Larus saundersi</i>	VU	✓			✓	
		<i>Charadrius alexandrinus</i>	LC				✓	
		<i>Charadrius mongolus</i>	LC				✓	
		<i>Limosa limosa</i>	NT			✓		
<i>Limosa lapponica</i>	NT			✓				
GS10	Hoedong Reservoir	<i>Aix galericulata</i>	LC				✓	
GS11	Hongdo Island	<i>Larus crassirostris</i>	LC		✓		✓	✓
GS12	Ulsan Bay	<i>Aythya ferina</i>	VU	✓				
GS13	Ulsan–Guryongpo Coast	<i>Podiceps cristatus</i>	LC					✓
		<i>Larus crassirostris</i>	LC					✓
		<i>Larus argentatus</i>	LC					✓

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
GS14	Hyeongsan River	<i>Larus schistisagus</i>	LC					✓
		<i>Larus ridibundus</i>	LC					✓
GS14	Hyeongsan River	<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
GS15	Pohang–Yeongdeok Coast	<i>Podiceps cristatus</i>	LC				✓	
GS16	Yeongdeok–Pyeonghae Coast	<i>Podiceps cristatus</i>	LC				✓	
GS17	Andong Lake	<i>Aix galericulata</i>	LC				✓	
		<i>Aythya ferina</i>	VU	✓				
GS18	Imha Lake	<i>Anas falcata</i>	NT			✓		
GS19	Gumi–Haepyeong Wetlands	<i>Anser albifrons</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
GS20	Upo Swamp	<i>Anser fabalis</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
GS21	Dokdo Island	<i>Calonectris leucomelas</i>	NT			✓		
		<i>Oceanodroma monorhis</i>	NT			✓		
GS22	Uljin–Wondeok Coast	<i>Podiceps cristatus</i>	LC				✓	
GW01	Wondeok–Samcheok Coast	<i>Podiceps cristatus</i>	LC				✓	
GW02	Samcheok–Gangneung Coast	<i>Podiceps cristatus</i>	LC				✓	
GW03	Gyeongpo Lake	<i>Aythya ferina</i>	VU	✓				
GW04	Gangneung–Jumunjin Coast	<i>Melanitta americana</i>	NT			✓		
		<i>Podiceps cristatus</i>	LC				✓	
		<i>Larus canus</i>	LC				✓	
GW05	Jumunjin–Yangyang Coast	<i>Melanitta americana</i>	NT			✓		
		<i>Podiceps cristatus</i>	LC				✓	
GW06	Yangyang–Sokcho Coast	<i>Podiceps cristatus</i>	LC				✓	
		<i>Larus canus</i>	LC				✓	
GW07	Cheongcho Lake	<i>Aythya ferina</i>	VU	✓				

ID	Site	Scientific name	IUCN Status	Global IBA criteria		Regional IBA criteria		
				A1	A4	B1	B3a	B3b
GW08	Sokcho-Ganseong Coast	<i>Podiceps cristatus</i>	LC				✓	
		<i>Podiceps auritus</i>	VU	✓				
		<i>Phalacrocorax pelagicus</i>	LC				✓	
GW09	Hwajinpo Lake	<i>Larus canus</i>	LC				✓	
GW10	Ganseong-Daejin Coast	<i>Melanitta americana</i>	NT			✓		
		<i>Podiceps cristatus</i>	LC				✓	
		<i>Phalacrocorax pelagicus</i>	LC				✓	
		<i>Larus canus</i>	LC				✓	
GW11	Cheolwon Basin	<i>Anser albifrons</i>	LC				✓	✓
		<i>Anas platyrhynchos</i>	LC					✓
		<i>Grus vipio</i>	VU	✓	✓		✓	✓
		<i>Grus japonensis</i>	EN	✓	✓		✓	✓
JJ01	Hado-ri Wetland	<i>Aythya ferina</i>	VU	✓				
		<i>Platalea minor</i>	EN	✓				
JJ02	Seongsanpo	<i>Aythya ferina</i>	VU	✓				
		<i>Platalea minor</i>	EN	✓				
JJ03	Seogwipo Coast	<i>Aix galericulata</i>	LC				✓	
		<i>Podiceps cristatus</i>	LC				✓	
JJ04	Marado Island	<i>Calonectris leucomelas</i>	NT			✓		
		<i>Synthliboramphus wumizusume</i>	VU	✓	✓		✓	
JJ05	Jeju Coast	<i>Aix galericulata</i>	LC				✓	
		<i>Anas falcata</i>	NT			✓		
		<i>Aythya ferina</i>	VU	✓				
JJ06	Hwado Island	<i>Calonectris leucomelas</i>	NT			✓		
		<i>Oceanodroma monorhis</i>	NT		✓	✓	✓	
JJ07	Sasudo Island	<i>Calonectris leucomelas</i>	NT			✓		

*EN: Endangered, VU: Vulnerable, NT: Near Threatened, LC: Least Concern



Key Habitats *for* Waterbirds *and* Seabirds *in* Korea

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