

The Korean Peninsula is ecologically isolated from the continent by the high mountain terrain of Baekdusan and two large rivers. The Amnokgang in the northwest and the Dumangang in the northeast act as barriers that limit wild animals' migration to Korea from China and Russia. The Baekdudaegan forms the core of mountain ranges in the Korean Peninsula. Its continuous ranges reach out to the seas on three sides of the Peninsula, forming the Hangang, Nakdonggang, Geumgang, Yeongsangang, and Seomjinjang. Residential areas in cities and villages and productive agricultural land and estuaries possess unique fauna. The Korean Demilitarized Zone (DMZ), subalpine zone, and islands play important roles as wintering, breeding, and stopover sites for migratory animals. In Korea, approximately 100,000 species of living organisms are estimated to inhabit the land, and 52,628 species have been identified and recorded. Among the recorded species, 30,675 species, which constitute 58.3% of the total, belong to the Kingdom Animalia, including 2,009 species of vertebrates, 128 species of tunicates, and 28,538 species of invertebrates. Because of the Korean Peninsula's ecological isolation, freshwater fish and insects of the Peninsula include more endemic species than other taxa. Endemic species are those that are native to a particular geographic area and are not naturally found anywhere else in the world. Approximately 4.3% of all species found in

Korea are endemic. Among higher-order animals, one mammalian species, one bird species, six amphibian species, and 66 fish species are endemic to Korea. Among marine organisms, there are approximately 32 species per 1,000 km² of territorial water and Exclusive Economic Zone (EEZ), which is the highest diversity in the world, and 717 species are found in coastal wetlands. Endemic animal species inhabiting the Korean Peninsula account for 5.84% of indigenous animal species and include 74 vertebrate species, one tunicate species, and 1,716 invertebrate species. Korea is also home to many species listed as endangered. Of the 267 Endangered Wildlife, 176 species are animals. Among marine organisms in Korean waters, 80 species are designated as marine organisms under protection, including endangered species living in the ocean or along the coast, species endemic to Korea, and species with high scientific and economic value. Of these 80 species, 73 are animals, including 16 marine mammals. Conservation projects for endangered wild animal species are conducted to target the Asiatic Black Bear (*Ursus thibetanus ussuricus*), Korean Goral (*Naemorhedus caudatus*), Korean Fox (*Vulpes vulpes peculiosa*), Oriental Stork (*Ciconia boyciana*), Crested Ibis (*Nipponia nippon*), Sea Horse (*Hippocampus coronatus*), Green Turtle (*Chelonia mydas*), and several other species. Twenty-eight Ex-situ conservation institution have been designated for conservation

projects for endangered species and their habitat restoration: 13 institutes subsidized by the Ministry of Environment and 15 by the Ministry of Oceans and Fisheries. In addition, there are 10 medical care and rescue centers for protected marine animal species. Recently, a decrease in the number of predators at higher trophic levels led to a population increase of small and medium-sized mammals such as Wild Boar (*Sus scrofa*) and Water Deer (*Hydropotes inermis*), which have damaged crops and cultivated areas. Some animals reverted to wild state have been affecting the faunal ecosystem. The government designates invasive animals and wild animals as ecosystem-disturbing species, harmful wild animals, and animals reverted to wild state to prevent disturbance of the ecosystem by invasive animals and damage to people and property by wild animals. The major threats to wild animals are illegal hunting tools, poaching, trafficking, roadway mortality, and whaling.

Endangered Wildlife Class I and II
Endangered Wildlife refers to animals that are recognized to be at risk of extinction due to natural or artificial factors. Class I species are those currently at risk of extinction, while Class II species are animals that may become endangered in the near future if threat factors are not removed.

Number of Animal Species in Korea

Category		Number of Species	Proportion of Species (%)
Chordates	Mammals	125	0.41
	Birds	537	1.75
	Reptiles	32	0.10
	Amphibians	21	0.07
	Fishes	1,294	4.22
	Tunicates	128	0.42
	Invertebrates (excl. insects)	9,900	32.27
	Insects	18,638	60.76

Ministry of Environment, Ministry of Maritime Affairs and Fisheries (2019)

Number of Animal Species Under Management

Category	Number of Species Requiring Approval for Outbound Transfer	Number of Wildlife prevented from Capture and Collection
Vertebrates	Mammals	0
	Birds	0
	Reptiles	0
	Amphibians	0
	Fishes	82
Invertebrates	Insects	2,167
	Arachnids	490
	Molluscs	406
	Other	763
		57

Ministry of Environment, Ministry of Maritime Affairs and Fisheries (2019)

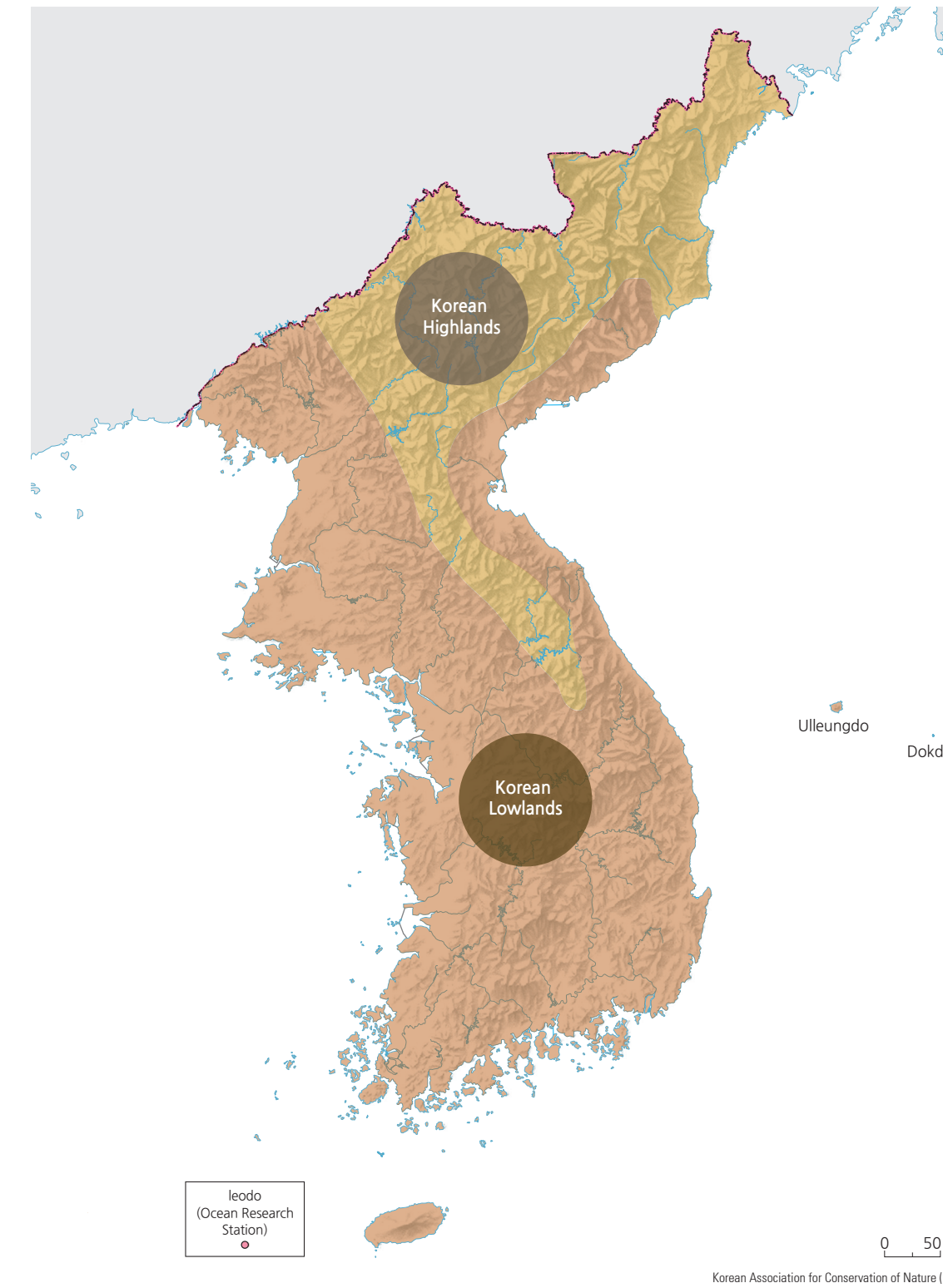
Number of Protected Animal Species

Taxon	Endangered Wildlife (Animal) (Class I)	Endangered Wildlife (Animal) (Class II)	Total
Mammals	12	8	20
Birds	14	49	63
Reptiles	1	3	4
Amphibians	1	3	4
Fishes	11	16	27
Insects	6	20	26
Invertebrates (excl. insects)	4	28	32
Total	49	127	176

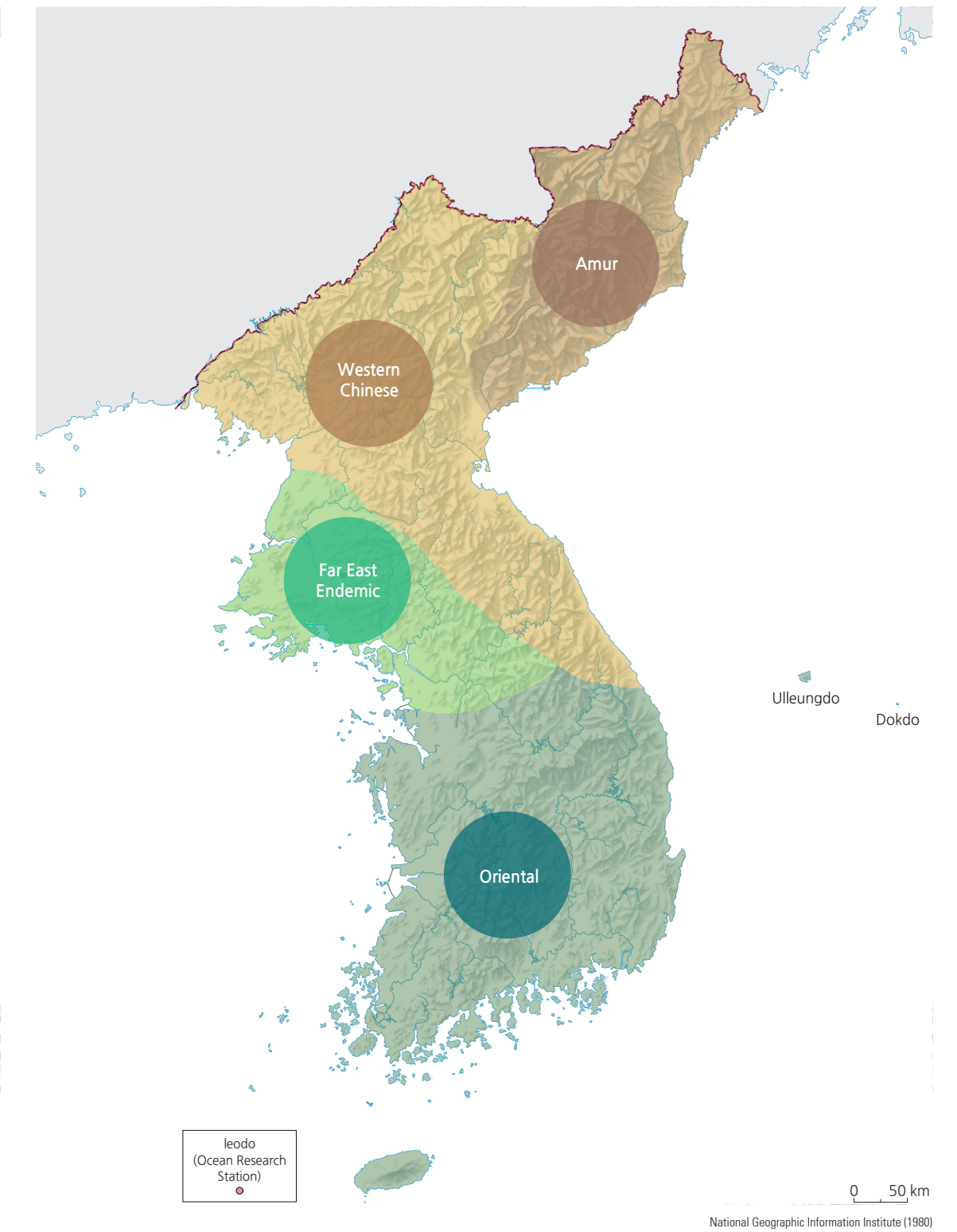
Ministry of Environment, Ministry of Maritime Affairs and Fisheries (2019)

Zoogeographical Regions

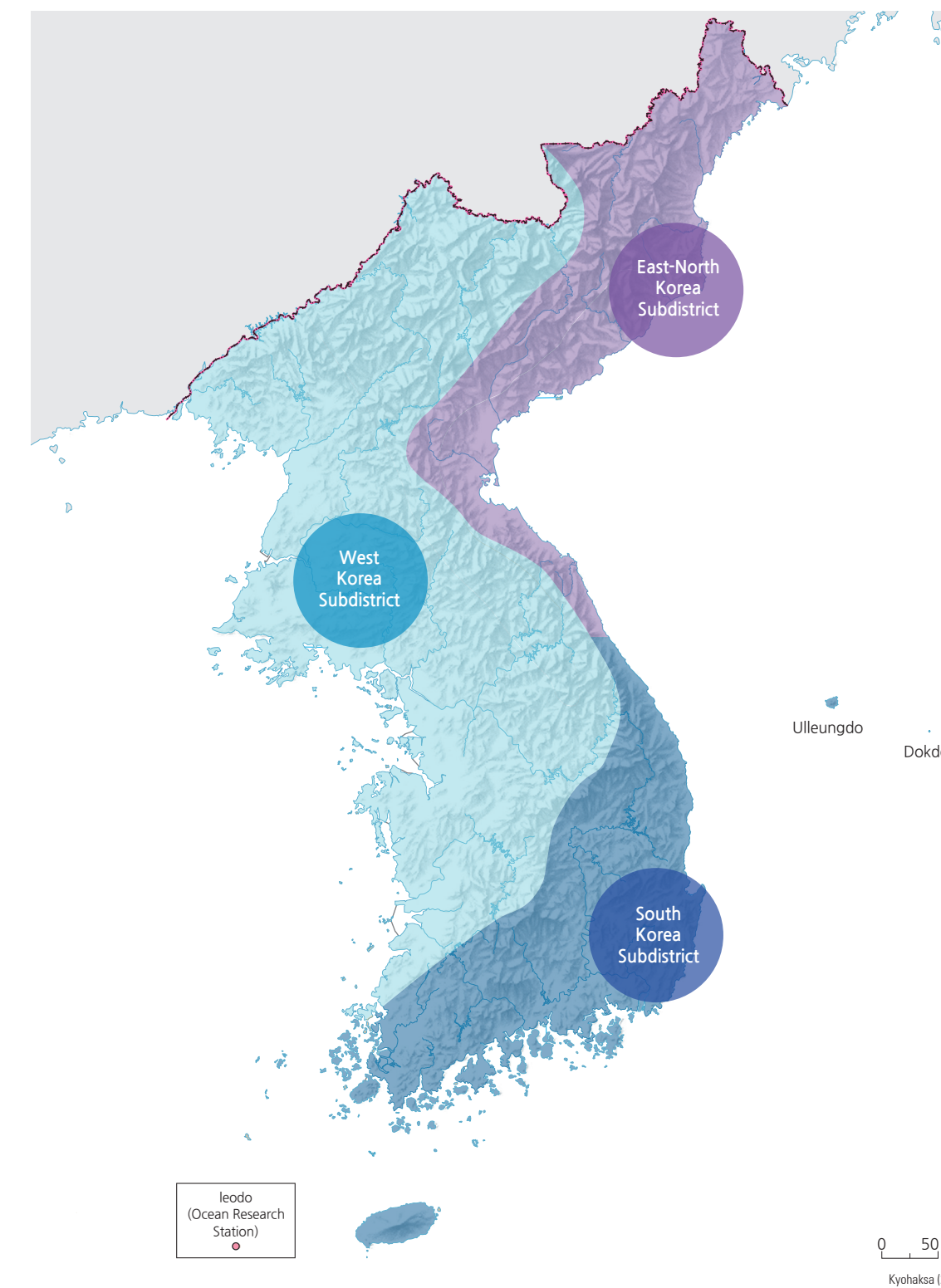
Distributional Regions of Mammals and Birds



Zoogeographical Region of Butterflies



Distributional Regions of Freshwater Fish in the Korean Peninsula



The geographical distribution of animals is determined by habitat conditions in which landform, climate, hydrology, and vegetation are reflected. It is more difficult to distinguish animal zoogeographical regions because animals are more adaptable to the environment than plants and have mobility. According to Wallace's zoogeographic regions, the Korean Peninsula belongs to the Palearctic realm, which includes North Africa, Europe, and most of Asia. Only a few attempts have been made to categorize the zoogeographical region of the Korean Peninsula, and some attempts have been made on mammals, insects, and fish.

The Korean Peninsula is subdivided into the Korean Highlands and Korean Lowlands in relation to the distribution of mammal and bird species and vegetation zones. In the Korean Highlands, the natural environment and landscapes are similar to those of the Ussuri region in Russia and the northeastern region of China. Mammals such as *Crocivura lasiura*, *Ochotona hyperborea*, *Vespertilio murinus*, *Martes zibellina*, *Mustela nivalis mosanensis*, and *Cervus nippon hortulorum* inhabit the Korean Highlands. Highlands are also home to many bird species such as *Lyrurus tetrix*, *Emberiza jankowskii*, *Picoides tridactylus*, *Surnia ulula*, *Dendrocopos minor*, and *Jynx torquilla*.

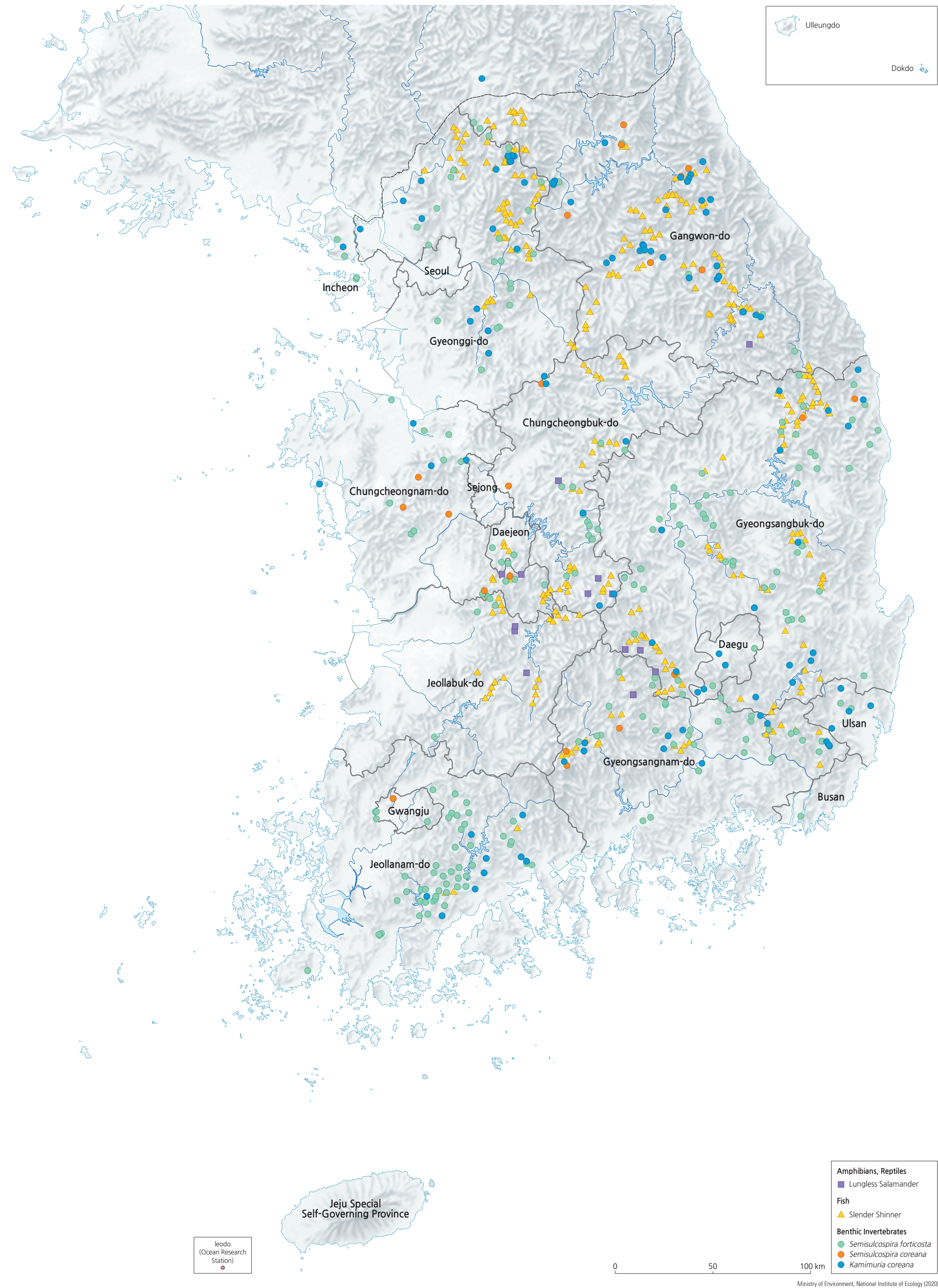
The Korean Lowlands include the western, central, and southern parts of Korea, where temperate forests and warm-temperate forests develop. Since there are fewer mountainous areas but more cultivated lands, animals that are typically found in piedmont-plains inhabit the areas. Mammalian species such as *Myotis formosus*, *Hydropotes inermis*, *Lasiopodomys mandarinus*, and *Sus scrofa* are found in the Korean Lowlands, along with bird species such as *Columba janthina*, *Microscelus amaurotis*, and *Zosterops japonicus*.

Butterfly species are categorized into four zoogeographic regions, based on the distribution and composition (the ratio between the Palearctic Butterfly species and the Oriental Butterfly species). *Oeneis urda*, *Clossiana angarensis*, *Euphydryas ichnea*, and *Albulina optilete* are representative Palearctic species that have advanced south from the Amur region in Siberia. Species such as *Seokia prattii*, *Nymphalis io*, and *Aporia hippia* that originated in western China, Mongolia, and southern Manchuria and crossed the Amnokgang are typical of southern Chinese species. *Mimathyma schrenckii*, *Nymphalis antiopa*, and *Aldania thisbe* are the Far East endemic species. Species with an original zoogeographic distribution in Kyushu, Tsushima, and Ryukyu, such as *Junonia almana*, *Parantica sita*, *Eurema hecabe*, and *Atrophaneura alcinous*, are categorized as Oriental species.

Zoogeographical distribution of freshwater fish species is classified into the Northeast Korea Subdistrict, the South Korea Subdistrict, and the West Korea Subdistrict. Freshwater species such as *Rhynchocypris semotilus* and *Cobitis pacifica* are endemic to the Northeast Korea Subdistrict. Palearctic species such as *Gobio cynocephalus*, *Phoxinus phoxinus*, and *Orthrias toni*, which are believed to have originated from the Amur River, are also found in the Northeast Korea Subdistrict. *Microphysogobio korensis*, *Iksookimia longicarpa*, and *Niwaella multifasciata* are found in the South Korea Subdistrict. Palearctic species such as *Rhynchocypris oxycephalus* and *Lefua costata*, and species with distribution in Japan such as *Oryzias latipes* and *Coreoperca kawamebari* are also found in the South Korea Subdistrict. Endemic species such as *Hemibarbus mylodon*, *Pseudopungtungia nigra*, *Moroco kumgangensis*, and *Gobiobotia brevisbarba*, as well as Palearctic species such as *Ladislavia taczanowskii* and *Phoxinus phoxinus*, are found in the West Korea Subdistrict.

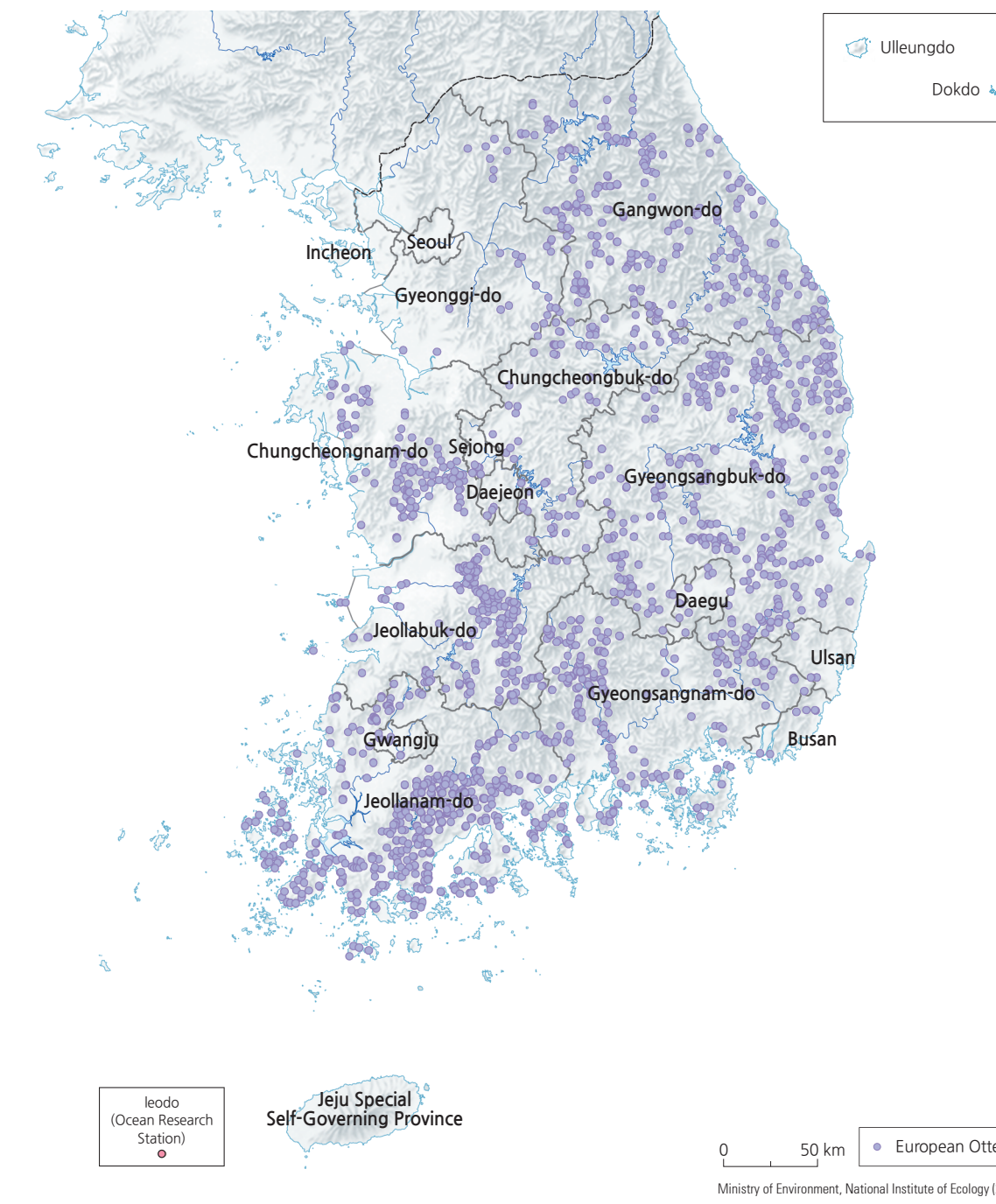
Endemic Animal Species

Distribution of Important Endemic Animal Species

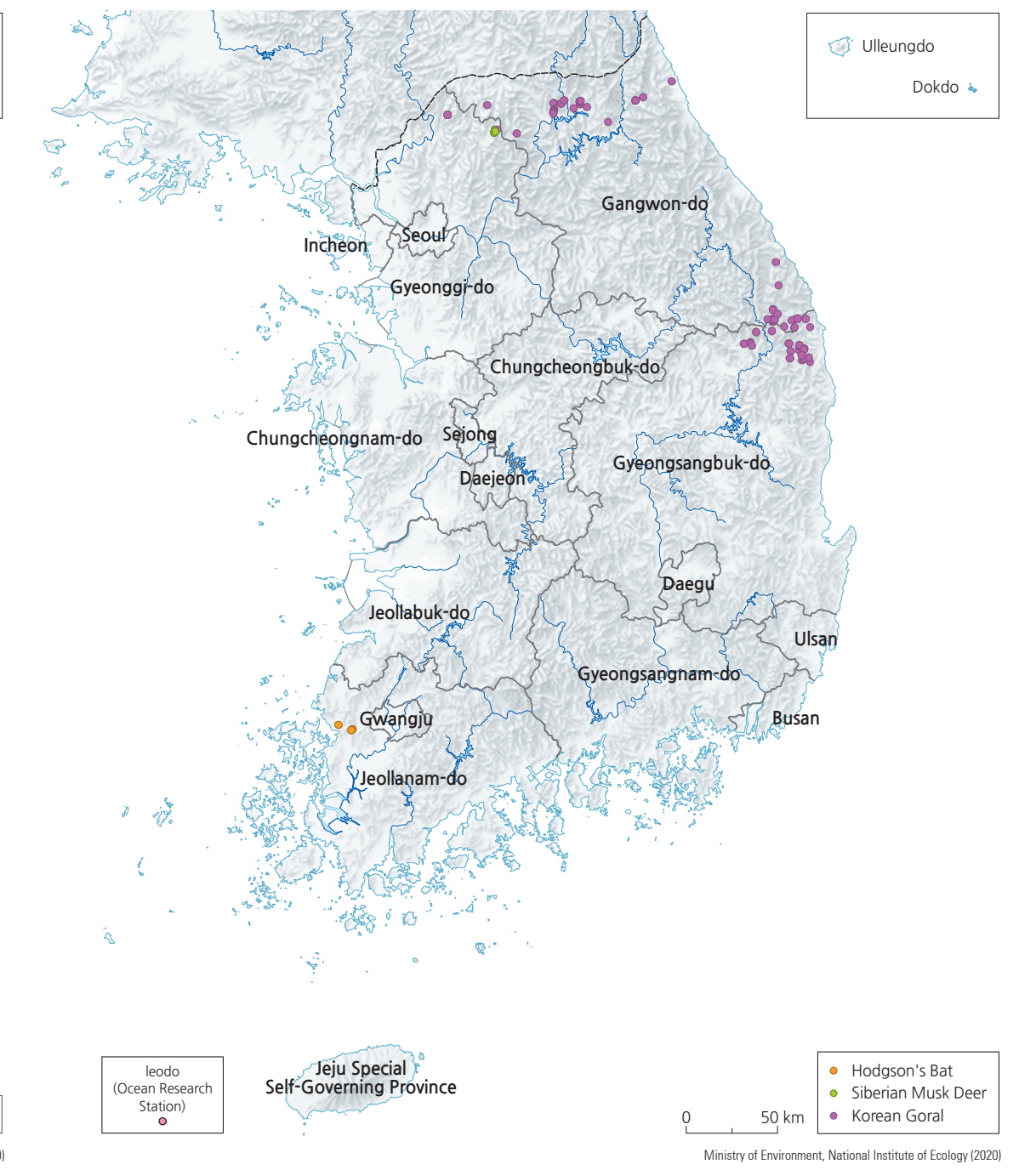


Mammals

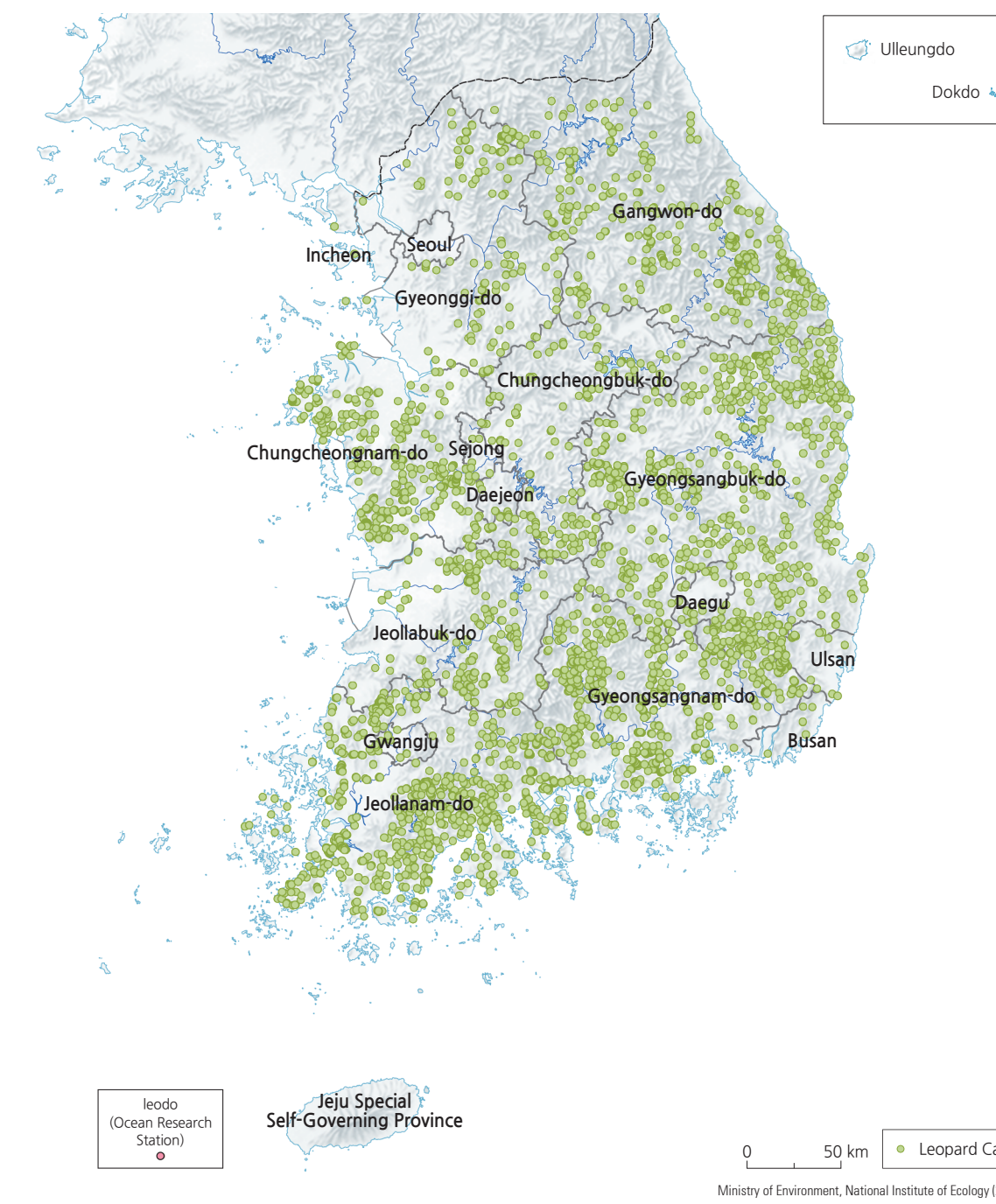
Distribution of Endangered Wild Mammal Class I Species (1)



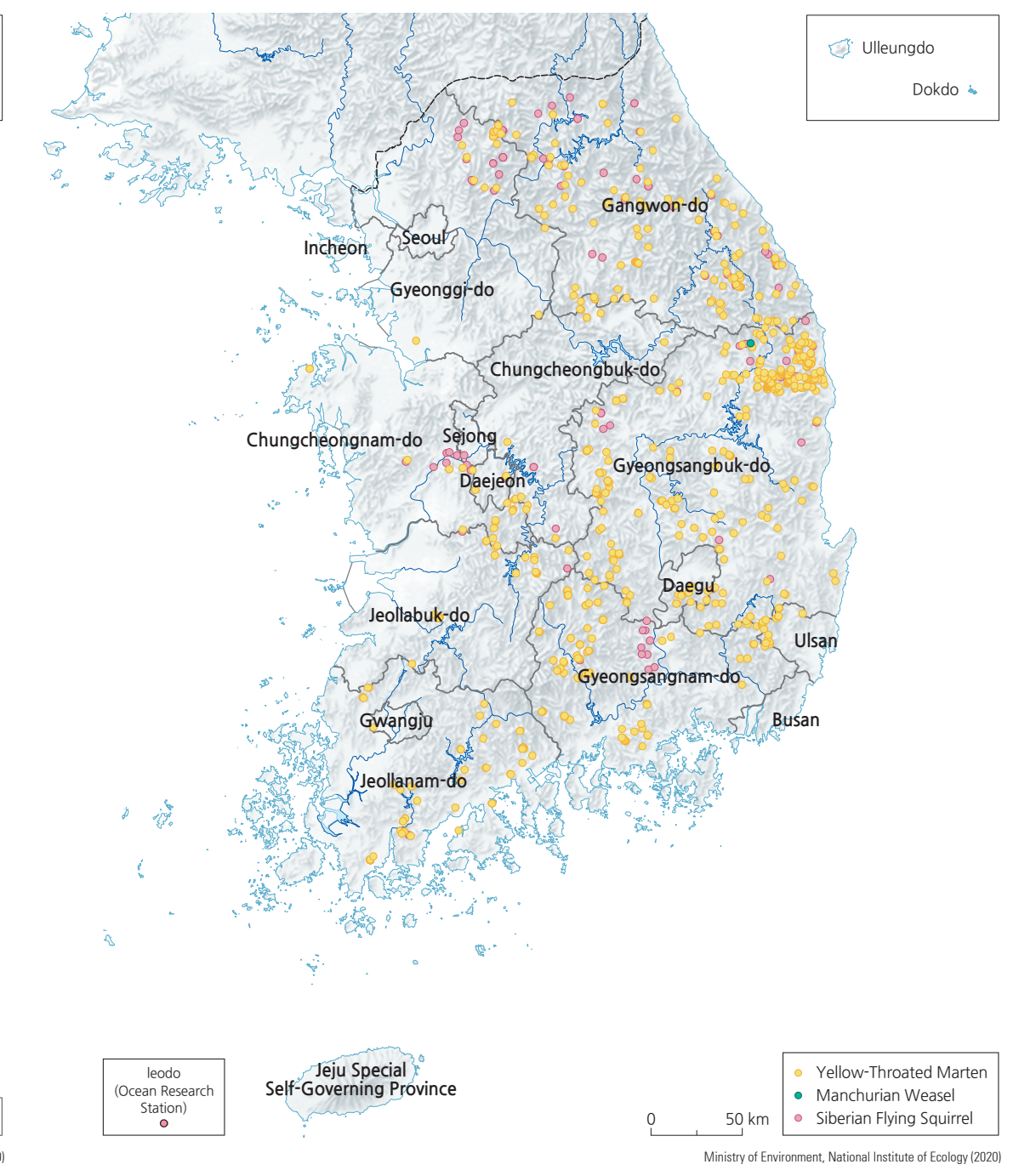
Distribution of Endangered Wild Mammal Class I Species (2)



Distribution of Endangered Wild Mammal Class II Species (1)



Distribution of Endangered Wild Mammal Class II Species (2)



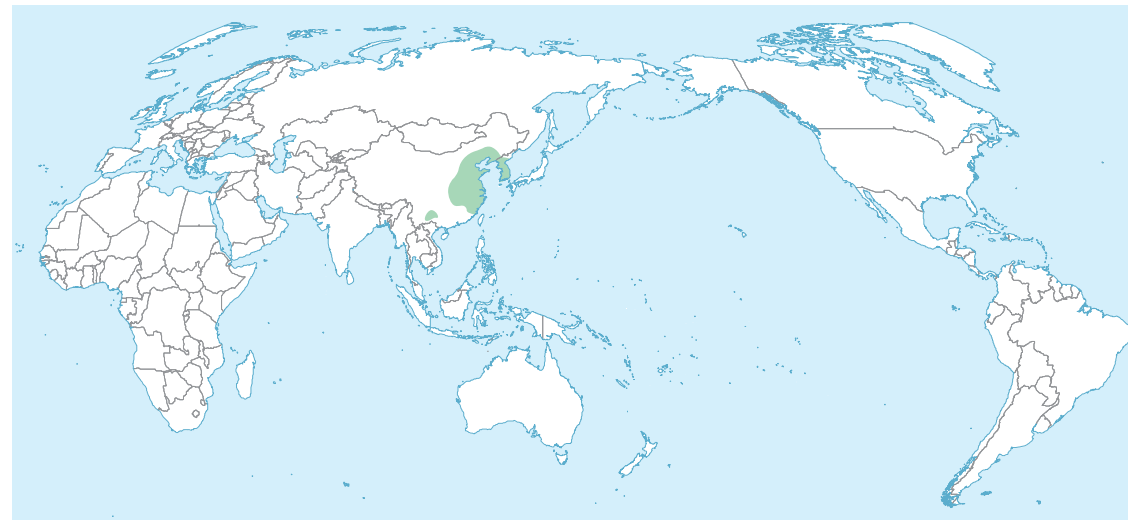
Among the 125 species of mammals inhabiting the land and coastal waters of South Korea (83 species of land mammals and 42 species of marine mammals), 20 species are designated as endangered (12 under Class I and eight under Class II) by the Ministry of Environment. Class I species, including the Asiatic Black Bear, Hodgson's Bat, Siberian Musk Deer, Korean Goral, and European Otter, and Class II species, including the Yellow-throated Marten, Manchurian Weasel, Leopard Cat, Ussuri Tube-nosed Bat, Brown

Long-eared Bat, and Siberian Flying Squirrel, are evenly distributed from the high elevations to the lowlands and nearby shorelines of South Korea. The Asiatic Black Bear mostly inhabits the Jirisan area; the Siberian Musk Deer inhabits the regions of Gangwon-do; and the Yellow-throated Marten, Leopard Cat, Siberian Flying Squirrel, Manchurian Weasel, and European Otter are evenly distributed nationwide. The Hodgson's Bat mostly inhabits the regions of

Chungcheong-do, Jeolla-do, and Gyeongsangbuk-do; the Brown Long-eared Bat inhabits the Gangwon-do region and northern woodlands; and the Ussuri Tube-nosed Bat mostly inhabits the regions of Gangwon-do, Chungcheong-do, Gyeonggi-do, and Gyeongsangbuk-do. Of 42 species of marine mammals inhabiting the South Korean waters, 16 species, including the Humpback Whale and California Sea Lion, have been designated as marine organisms under protection by the Ministry of Maritime Affairs and Fisheries.

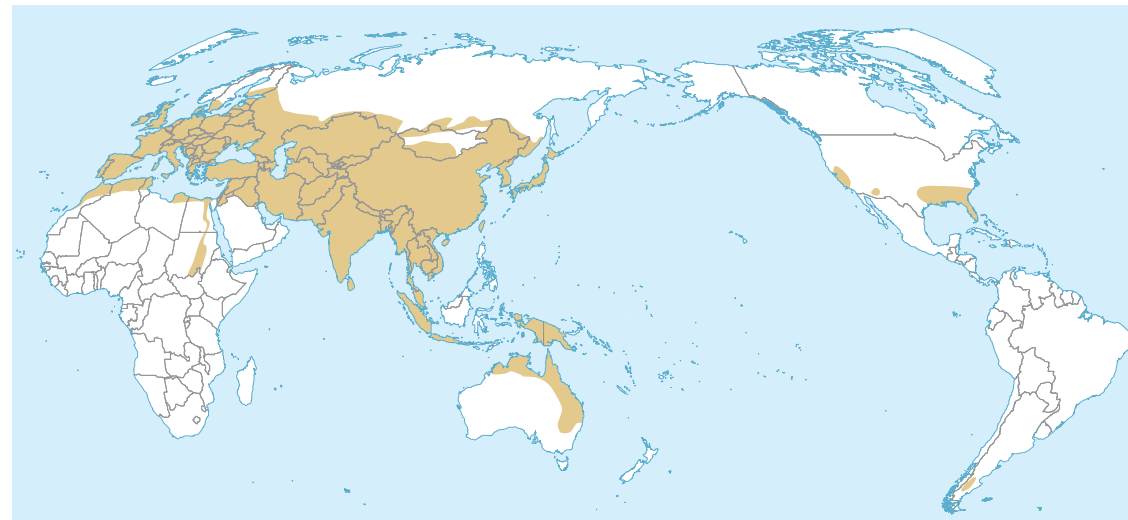
Representative Wild Mammals

Global Distribution of Water Deer (*Hydropotes inermis*)



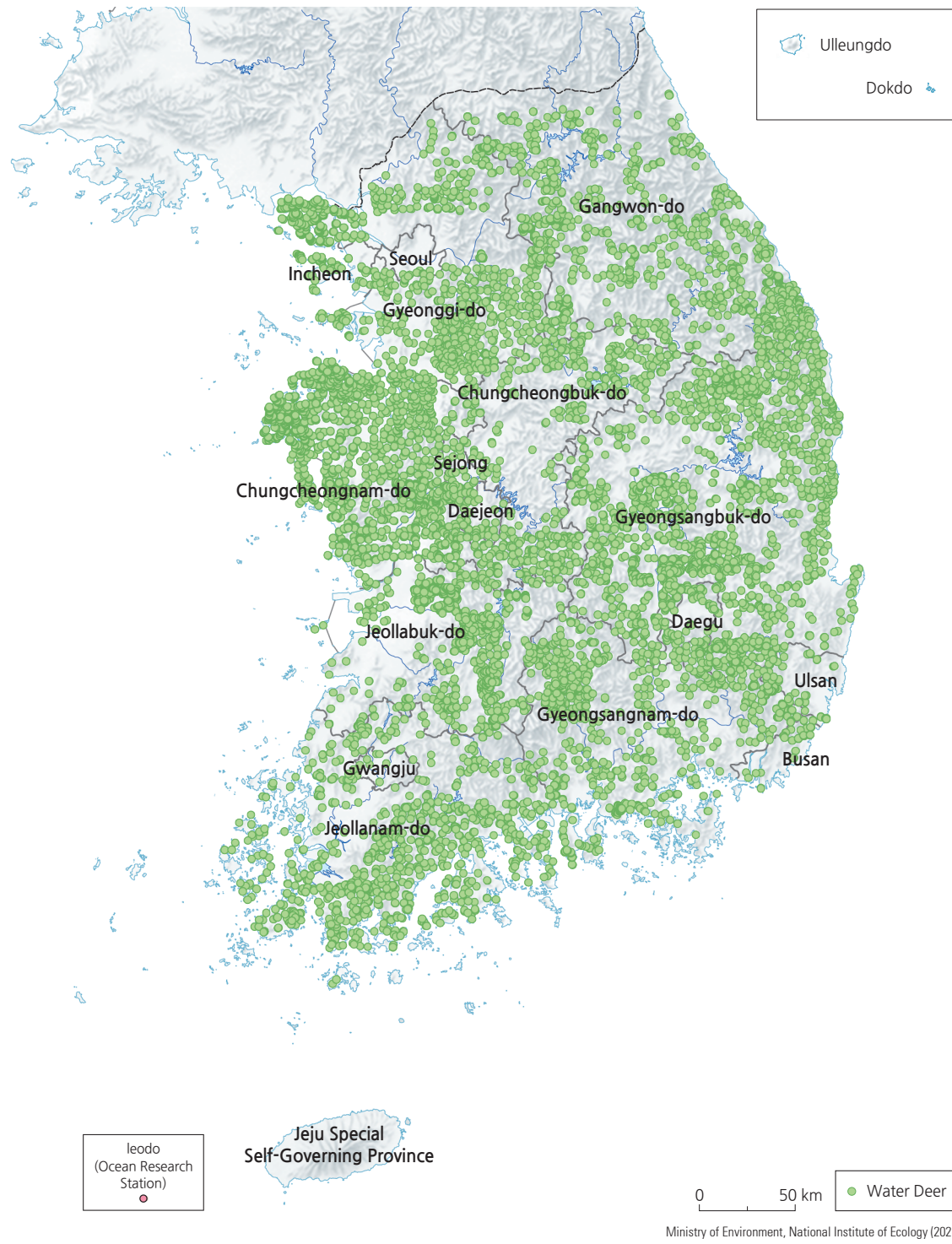
National Institute of Ecology (2016)

Global Distribution of Wild Boar (*Sus scrofa*)



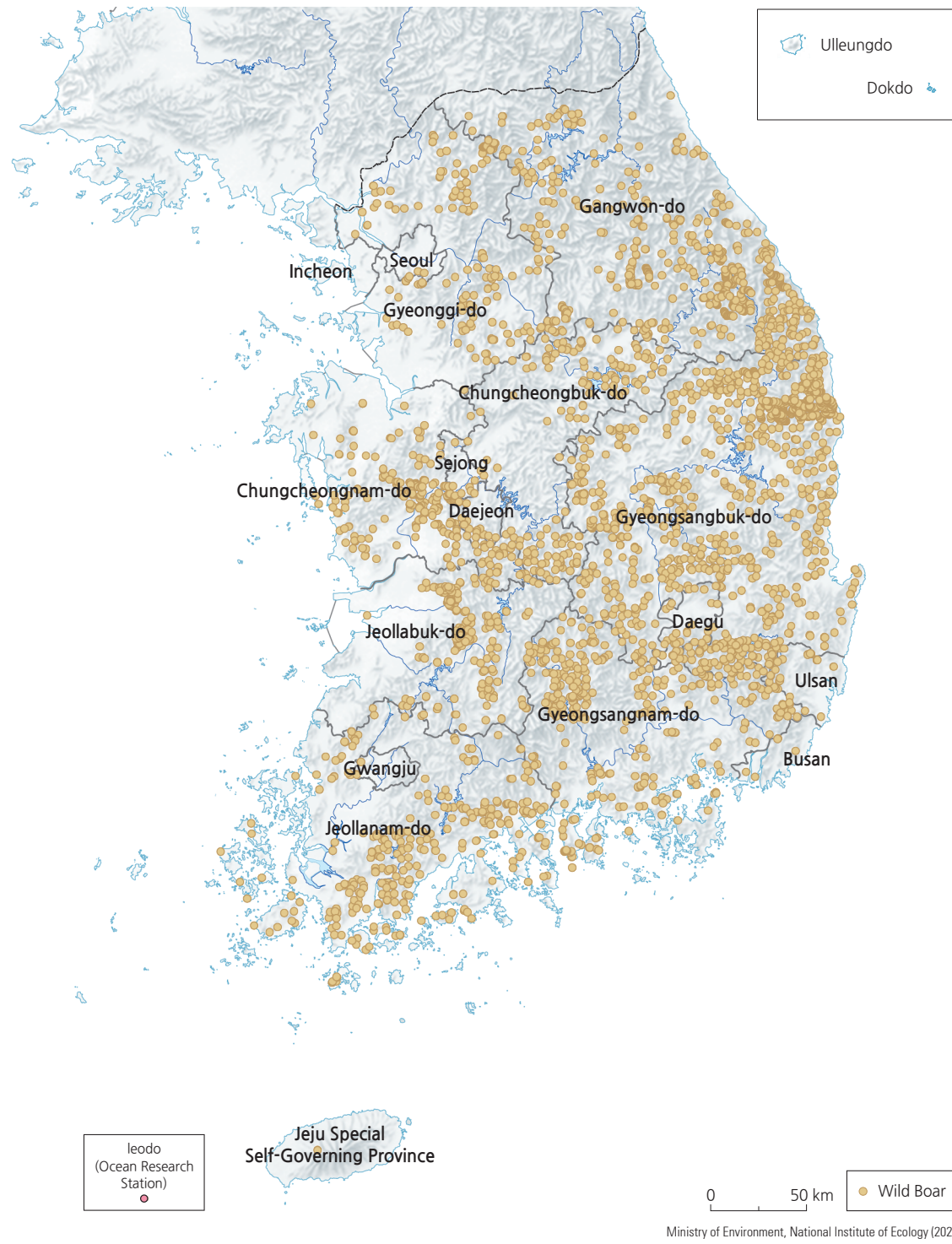
National Institute of Ecology (2016)

Distribution of Water Deer (*Hydropotes inermis*) in Korea



Ministry of Environment, National Institute of Ecology (2020)

Distribution of Wild Boar (*Sus scrofa*) in Korea



Ministry of Environment, National Institute of Ecology (2020)



Water Deer (Sihwaho, Ansan-si)



Wild Boar (Civilian Control Area, Goseong-gun)

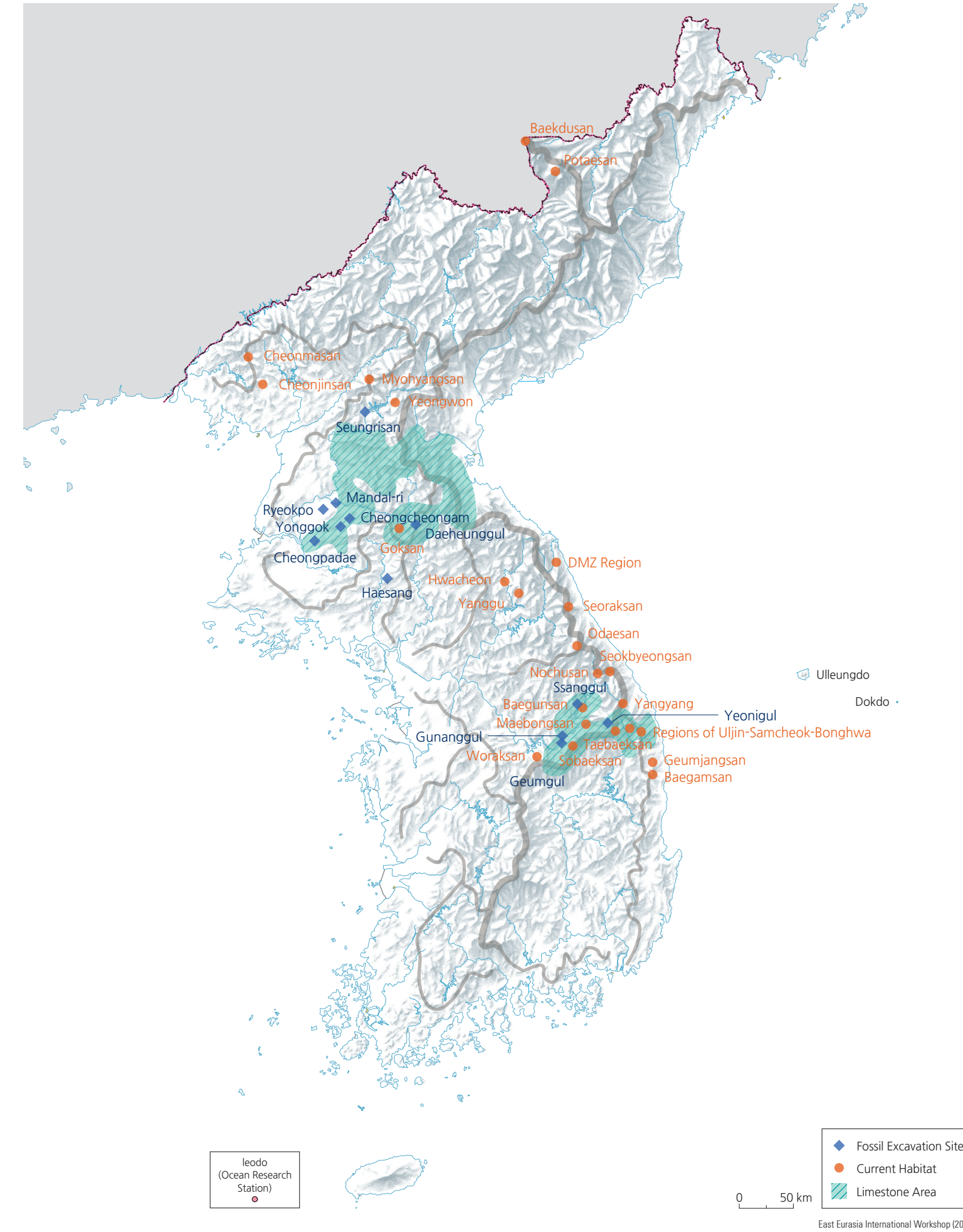
The Water Deer (*Hydropotes inermis*) only inhabits certain regions of South Korea and China, so that it is classified into a different subspecies. Despite its lack of antlers, it has canine teeth used to confront other males or to mark out its territory. Water Deer molt during the spring and autumn, mate from December to January, and give birth to 2-6 young around early June. They are cautious and active at night around lowland forests and cultivated fields.

The Wild Boar (*Sus scrofa*) had been distributed throughout South

Korea except in Jeju; however, the species has been naturalized in Jeju recently. With a high fertility rate and the ability to adapt to its environment, the population is growing. The Wild Boar is mostly nocturnal and able to cross kilometers of river or sea in some cases. The Wild Boar can generally be described as having a large head, short neck, small ears, and relatively big ears. More specifically, its head is long and conical-shaped, and its neck is short and thick. It has triangle-shaped earflaps that point upwards, and its eyes are very

small, while its legs are short and thick. Bristles cover its body, with fur resembling a mane on top. Its coat consists of brown fur that fades with age. Two canine teeth protrude at the bridge of the nose. The disappearance of large predatory animals such as tigers and leopards in Korea has led to a constant increase in the population of the Wild Boar, and the species has been encroaching on farmlands, causing damage. The Ministry of Environment has designated the Wild Boar as a harmful wild animal and controls its population size.

Fossil Excavation Site and Current Habitat of Korean Goral (*Naemorhedus caudatus*)



East Eurasia International Workshop (2015)

Excavation Sites of Korean Goral Fossils

Excavation Site	Location	Latitude	Longitude
Seungrisan	Seungrisan, Deokcheon-si, Pyeonganam-do	39° 45' 06"N	126° 17' 31"E
Ryeokpo	Ryongsan-ri, Daehyeon-dong, Ryeokpoguyeok, Pyeongyang-si	38° 55' 57"N	125° 51' 25"E
Cheong-cheongam	Baramgol, Sangwon-eup, Sangwon-gun, Pyeongyang-si	38° 51' 38"N	126° 08' 43"E
Mandal-ri	Mandal-ri, Seungho-guyeok, Pyeongyang-si	38° 59' 13"N	125° 59' 37"E
Yonggok	Ryonggok-ri, Sangwon-gun, Pyeongyang-si	38° 47' 25"N	126° 02' 45"E
Daeheunggul	Cheongpdae, Hwangju-eup, Hwangju-gun, Hwanghaebuk-do	38° 48' 07"N	126° 03' 26"E
Cheong-padae	Cheongpdae, Hwangju-eup, Hwangju-gun, Hwanghaebuk-do	38° 40' 12"N	125° 46' 33"E
Haesang	Hwegol, Haesang-ri, Pyeongsan-gun, Hwanghaebuk-do	38° 21' 49"N	126° 32' 46"E
Ssanggul	Gihwa-ri, Mit'an-myeon, Pyeongchang-gun, Gangwon-do	37° 18' 37"N	128° 31' 39"E
Yeonigul	Gurae-ri, Sangdong-eup, Yeongwol-gun, Gangwon-do	37° 08' 53"N	128° 50' 58"E
Gunanggul	Yecheon-ri, Gagok-myeon, Danyang-gun, Chungcheongbuk-do	37° 02' 11"N	128° 22' 13"E
Geumgul	Dodam-ri, Danyang-eup, Danyang-gun, Chungcheongbuk-do	36° 59' 36"N	128° 21' 35"E



Korean Goral (Taebaeksanmaek, Gangwon-do)

Reconstruction of the Distribution of Korean Goral in Historical Time

Korean historical documents record various local products and gifts to the king sent from local governments. The horns of the Korean Goral are the best example of such products. Five Korean historical documents from the 15th to the 19th centuries are used to reconstruct the spatial distribution of the Korean Goral in historical times.

The Korean Goral (*Naemorhedus caudatus*) has been on the Earth for 2 million years; individuals today are called "Living Fossils." The Korean Goral is a wild goat species found in the mountains of eastern and northern Asia, including Russia, China, and Korea. Approximately 700-800 gorals live in Korea. This species has been listed as endangered in South Korea and has been designated as Natural Monument No. 217. It inhabits steep, rocky mountains along Nangnimsanmaek and Taebaeksanmaek; a few are also found around the Baekdusan area and in the Korean Demilitarized Zone.

Since the oldest Korean Goral fossil, estimated to be 210

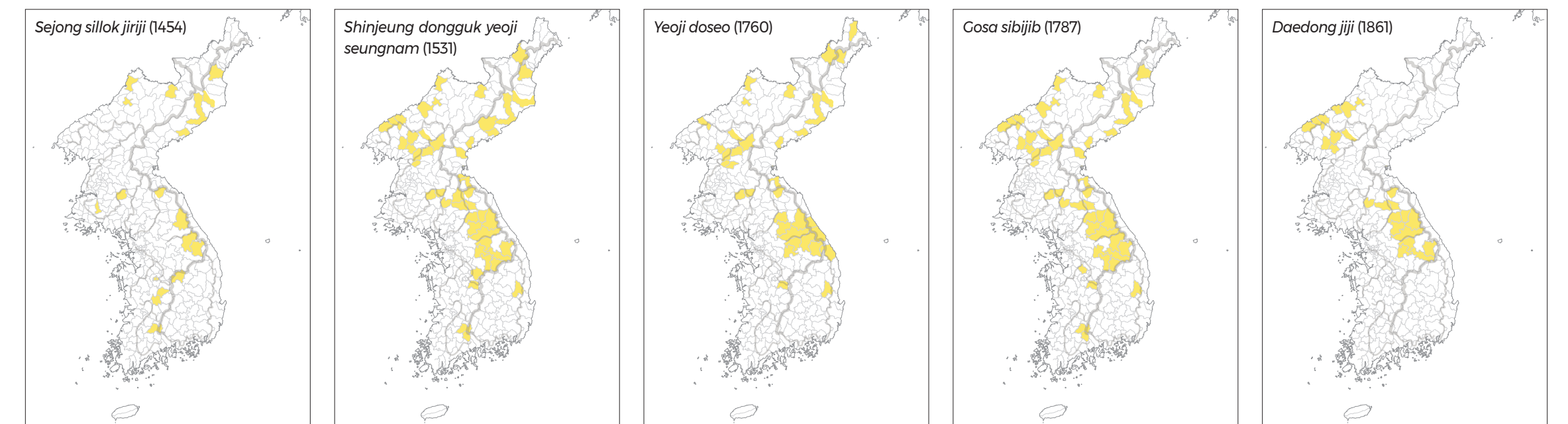
thousand years old (mid-Pleistocene), was excavated in Pyeongyang, more fossils have been unearthed in seven places in North Korea and four places in South Korea. Most were found in flat lowlands of the northwestern and central regions of the Korean Peninsula. This distribution pattern may indicate that, unlike today, the Korean Goral inhabited highlands and lowlands in the past.

According to historical documents (*Sejong sillok jiriji*, 1454; *Shinjeung dongguk yeoji seungnam*, 1531; *Yeoji doseo*, 1760; *Gosa sibijib*, 1787; *Daedong jiji*, 1861), Korean Gorals were mainly distributed in Gangwon-do, Pyeongan-do, and Hamgyeong-do. The gorals had a more extensive distributional range than they do

today across regions such as Cheongsong in Gyeongsangbuk-do, Namwon in Jeollabuk-do, and Gurye in Jeollanam-do. However, they have moved to their current habitats after losing their original ones due to human disturbance.

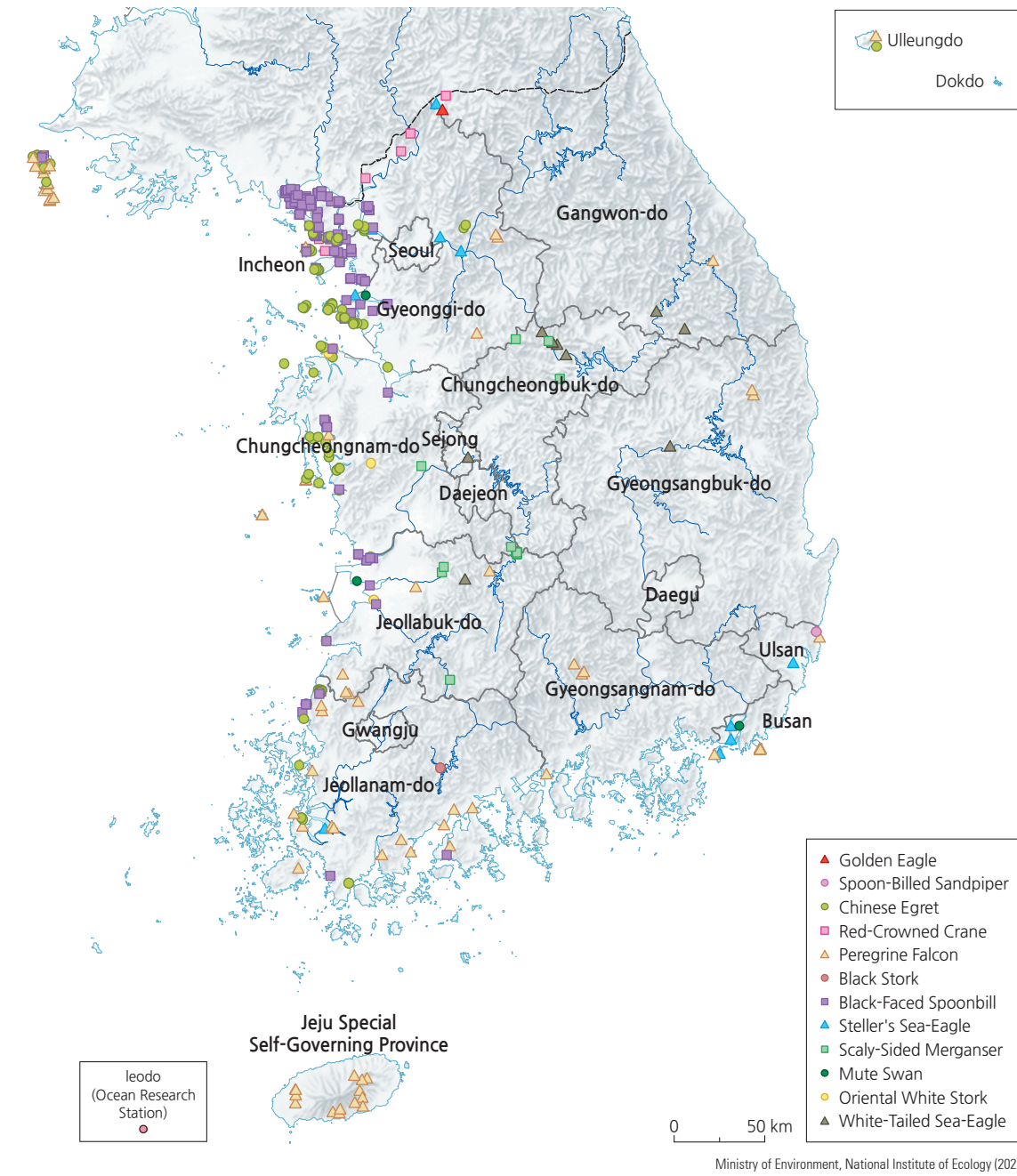
The present-day distribution area of Korean Gorals may not be ideal. It is a refuge for the remaining gorals surviving a complex set of factors, including population growth and consequent land-use change, cultivation practices in forests such as slash-and-burn, and poaching of wildlife. The slash-and-burn practice is an important driver that has shrunk habitats of the Korean Goral, and as a result, the habitat range has been confined to the eastern mountainous areas.

Spatio-Temporal Distribution of Korean Goral During Joseon Dynasty

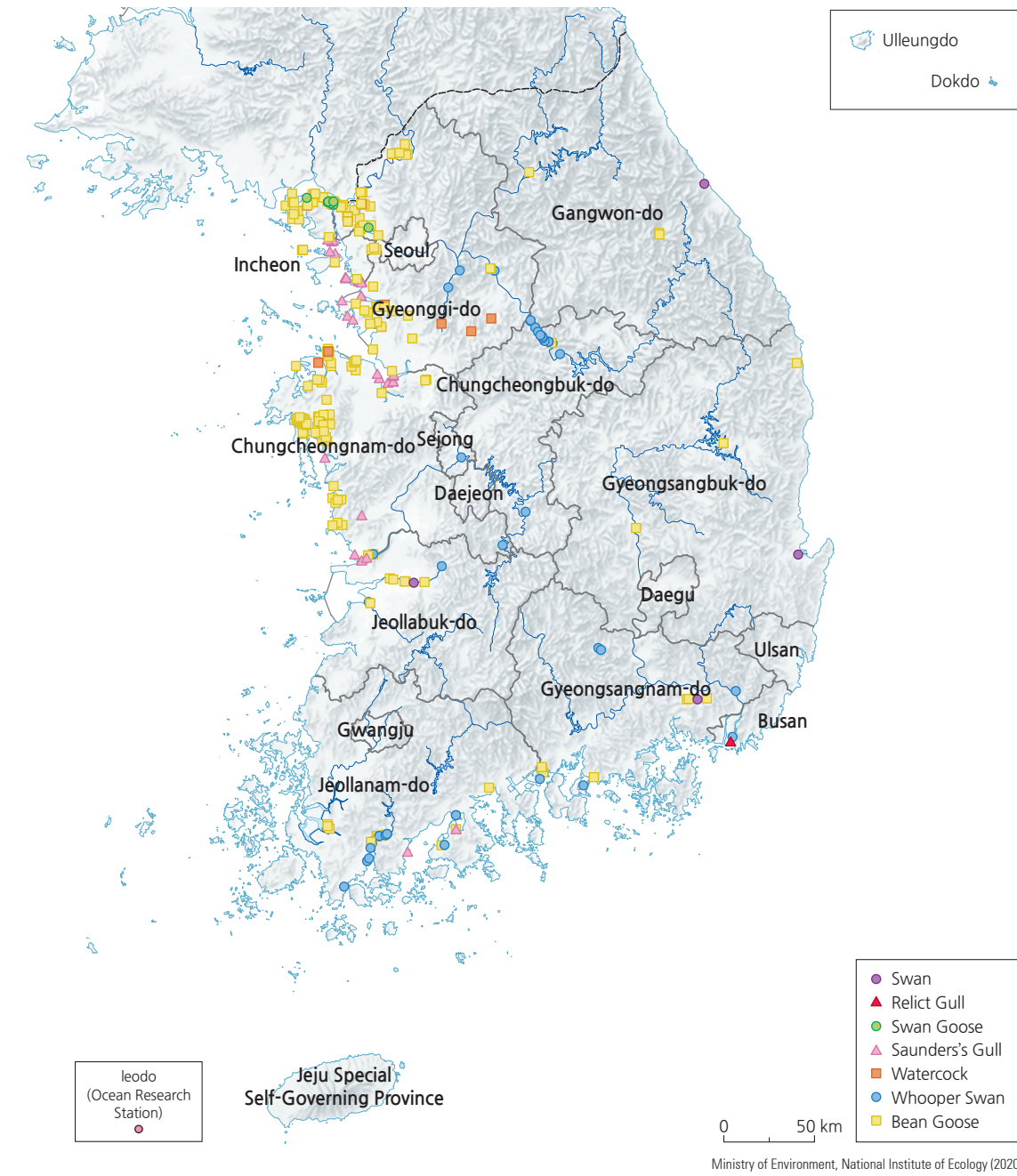


Endangered Wild Birds

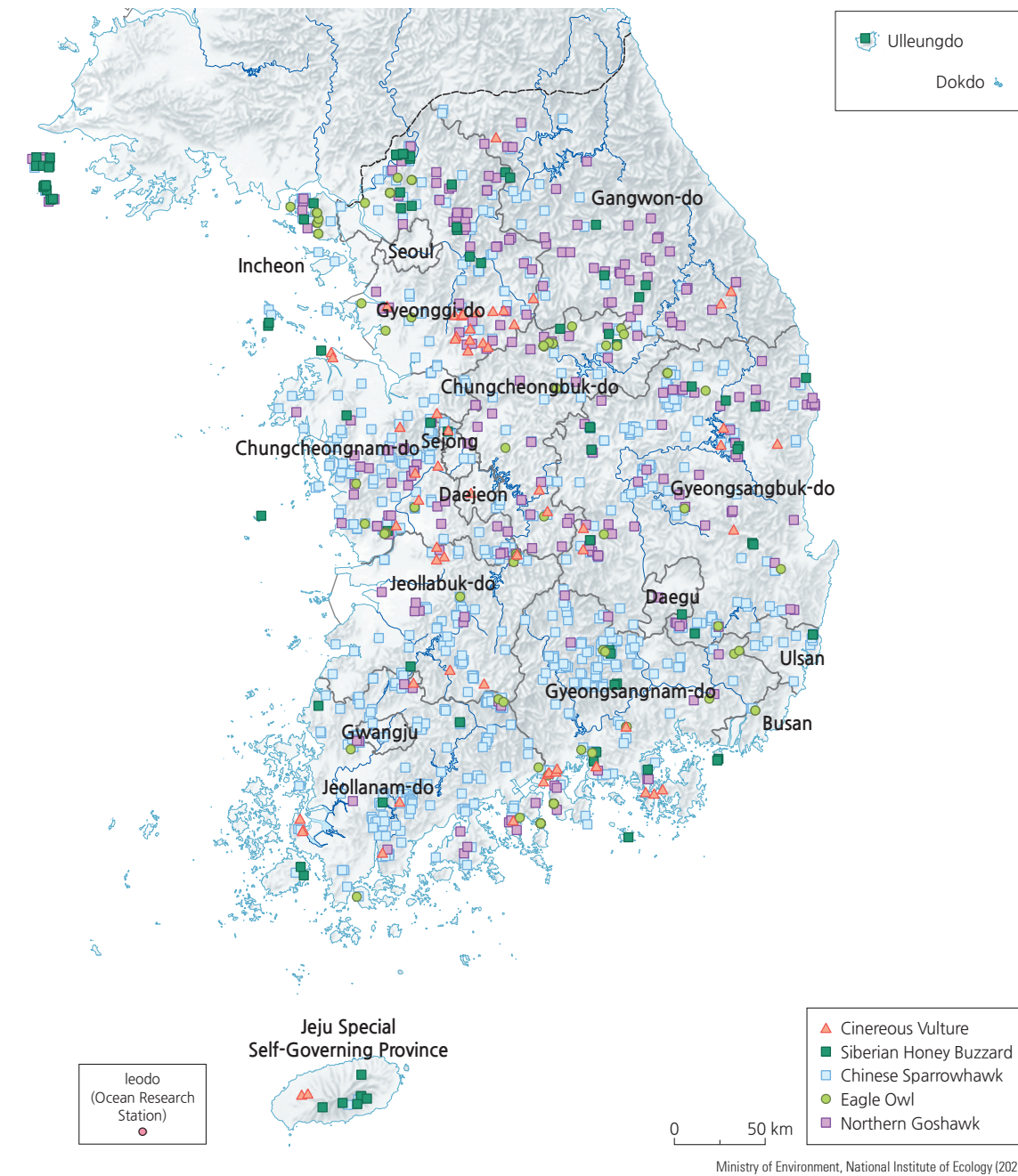
Distribution of Endangered Wild Bird Class I Species



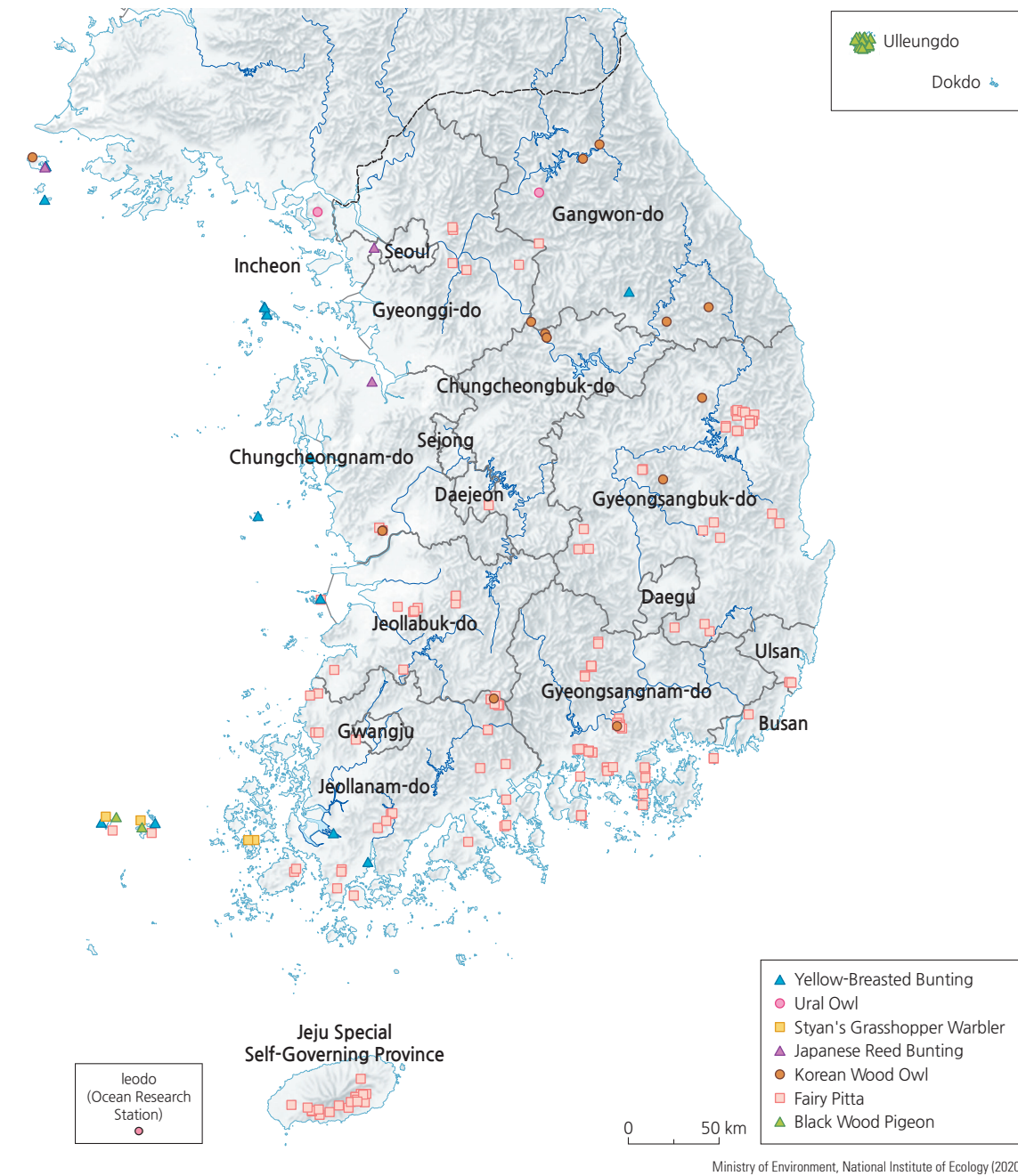
Distribution of Endangered Wild Bird Class II Species (1)



Distribution of Endangered Wild Bird Class II Species (2)



Distribution of Endangered Wild Bird Class II Species (3)



As of 2019, among the 537 bird species that have been identified in Korea, 63 species have been designated as Endangered Wildlife (14 species of Class I, 49 species of Class II) by the Ministry of Environment.

The Endangered Wildlife Class I of birds includes the following bird species. Mute Swan arrives at Hwajinpo Lake and Cheonsu Bay to breed during the winter season. The Oriental Stork winters along the coast and estuaries. The Black-faced Spoonbill breeds along the uninhabited islands off the west coast, with a small population wintering in Jeju. The Chinese Egret breeds along the uninhabited islands off the west coast, and the Peregrine

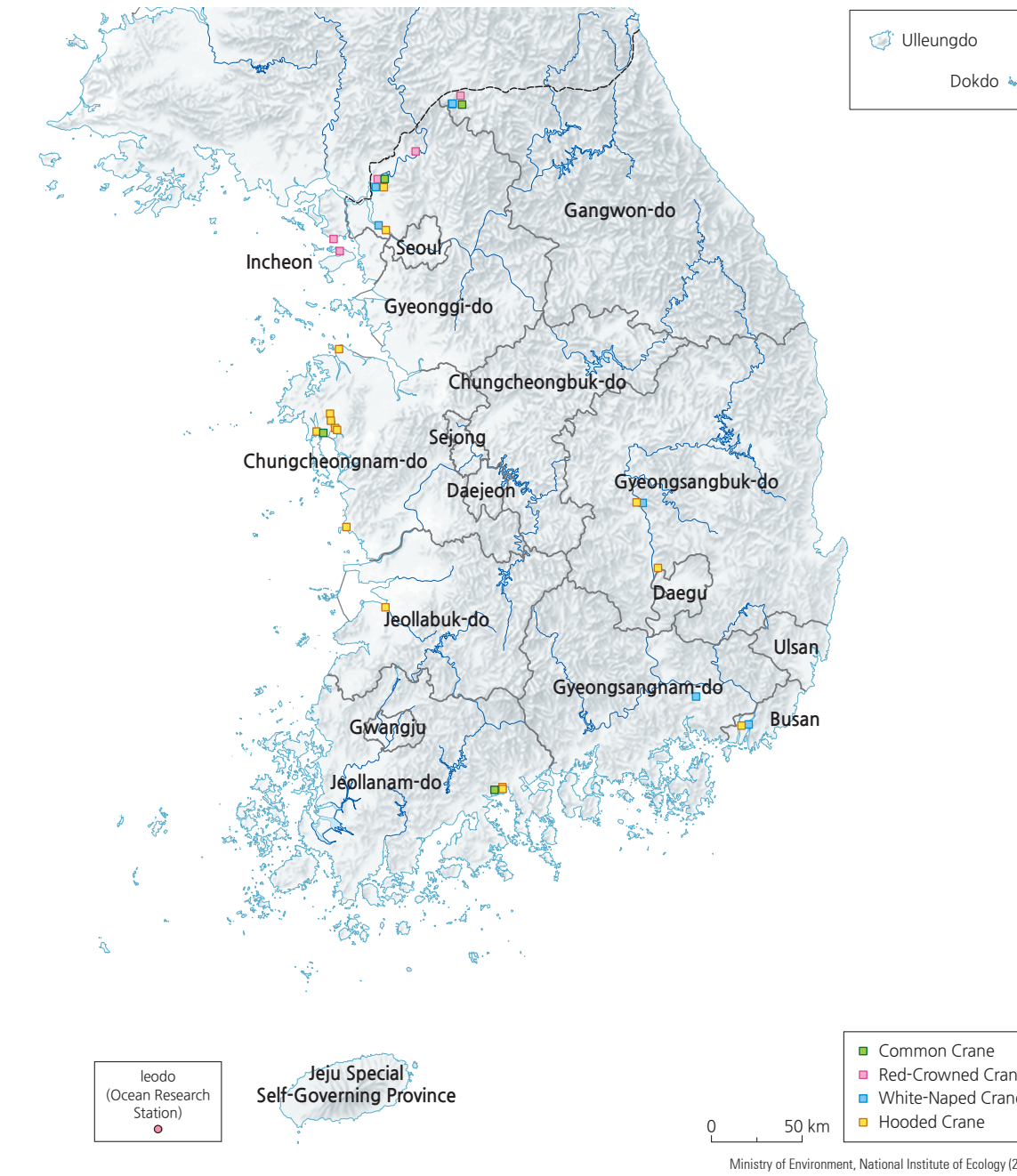
Falcon breeds mostly on island cliffs or coastal areas. The White-tailed Eagle and Steller's Sea Eagle winter along the coast and estuaries, large-scale reclamation grounds, water reservoirs, or large rivers. While there were old breeding record of the Golden Eagle breeding inland, they mostly winter along rivers, coasts, and inland plains. The Red-crowned Crane visits South Korea in the winter; the Spotted Greenshank and Spoon-billed Sandpiper can be observed on west and south coast tidal flats during the spring and autumn migratory seasons. The White-bellied Woodpecker inhabits forest areas where broadleaved trees and conifers grow together in various parts of South Korea. However, no sightings have been

recorded since the 1990s.

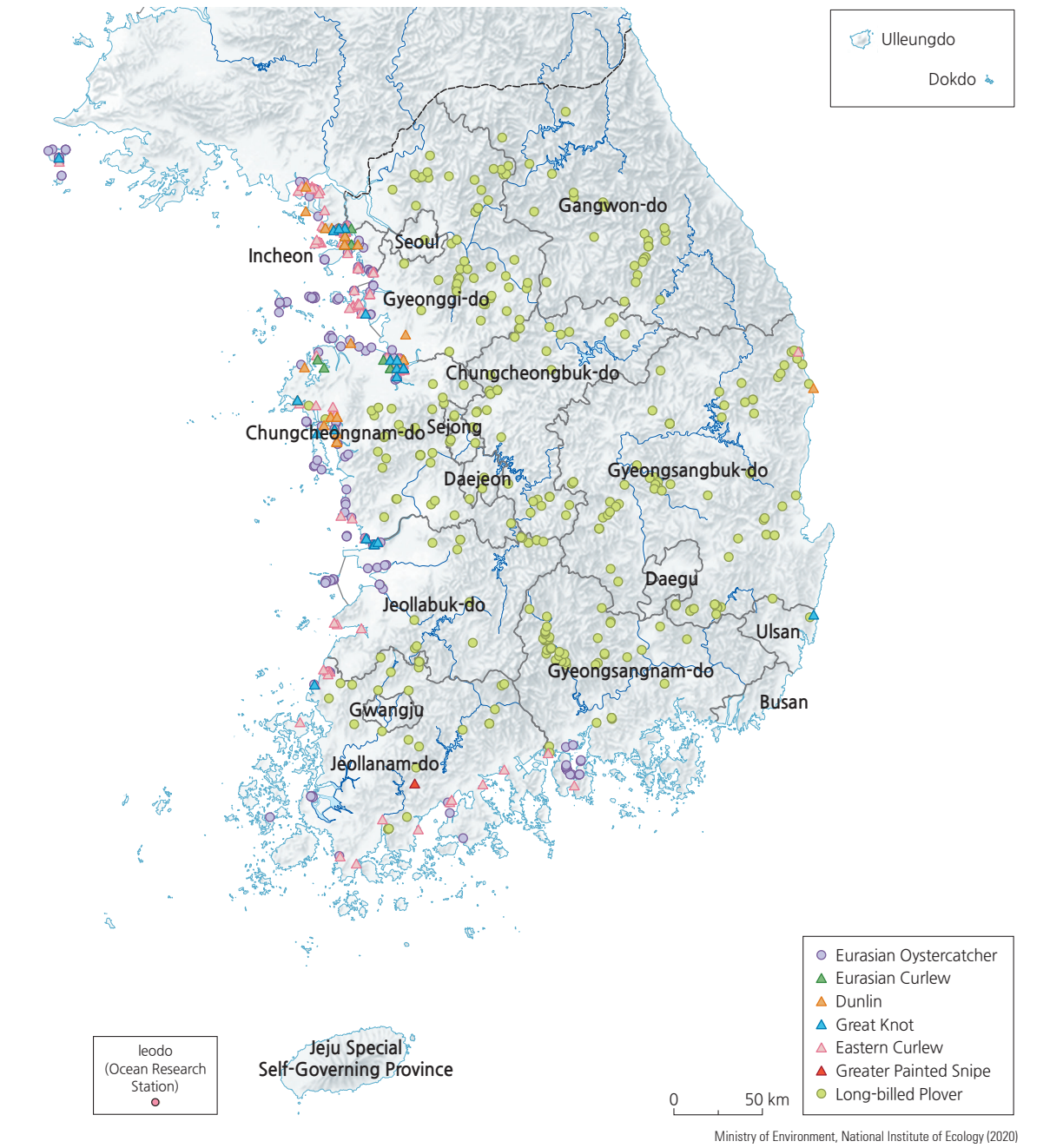
The Endangered Wildlife Class II of birds includes the Swan Goose and Bean Goose, inhabiting wetlands and riparian areas; the Eurasian Oystercatcher, Far Eastern Curlew, and Japanese Murrelet, observed on tidal flats or at sea; the Japanese Wood Pigeon and Styan's Grasshopper Warbler, inhabiting in island habitats; the Chinese Sparrowhawk, Hen Harrier, Eurasian Eagle-owl, Northern Goshawk, Black Woodpecker, and Fairy Pitta, living in grasslands or forested areas; and the Black Kite, Upland Buzzard, and Cinereous Vulture, living on open terrain. Of the 47 bird species that have been designated as Natural Monuments, 46 species are wild birds.

Representative Wild Birds

Distribution of Cranes



Distribution of Shorebirds



Red-Crowned Crane



Common Crane

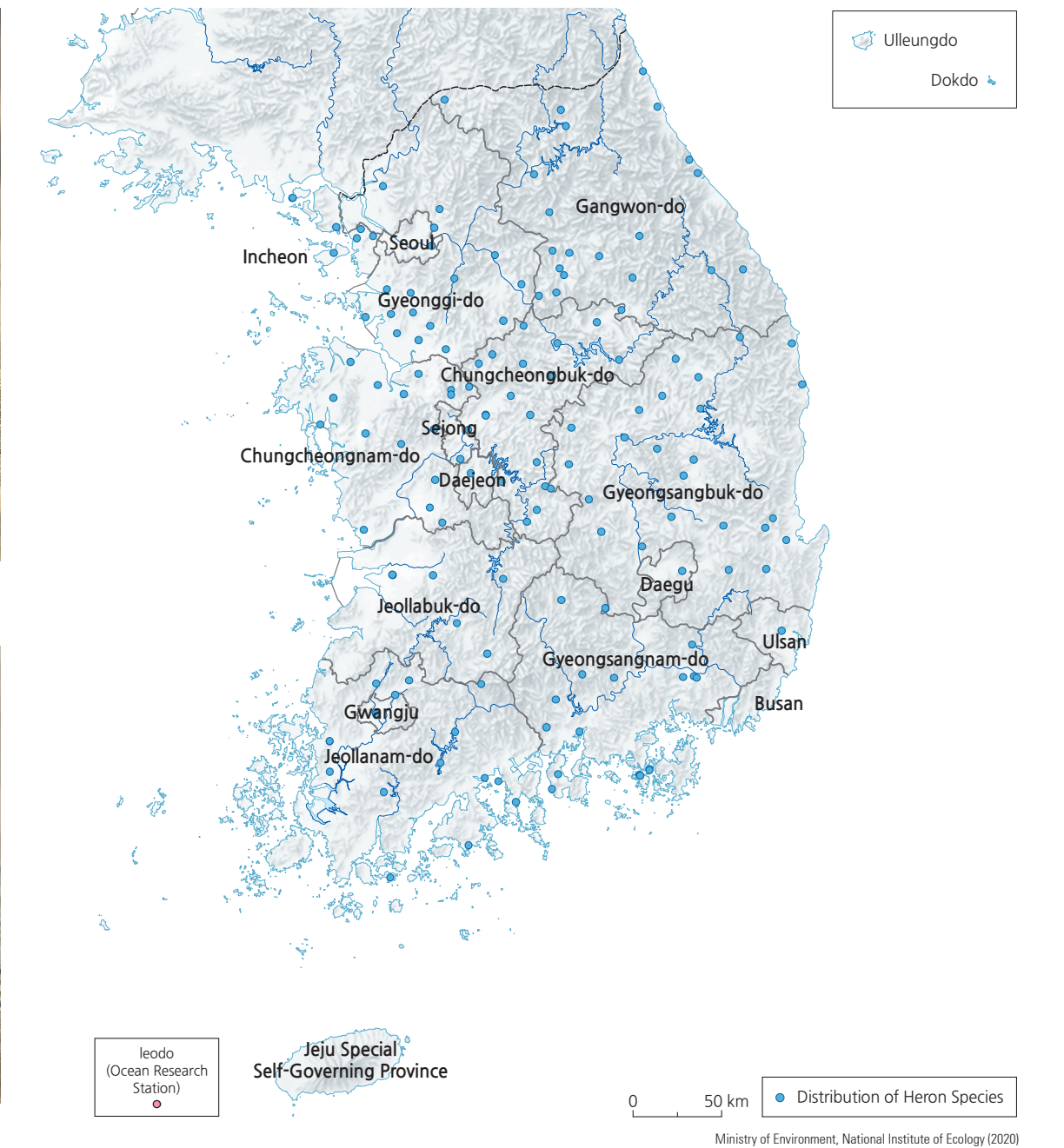


Far Eastern Curlew

Globally, cranes include four genera and 15 species. In Korea, Red-crowned Crane, White-naped Crane, and Hooded Crane are commonly observed. Demoiselle Crane, Eurasian Crane, Siberian Crane, and Sandhill Crane can be observed during migratory and wintering seasons. Cranes inhabit wetlands or grasslands. The wintering season in South Korea spans from October to March, during which the flock migrates south from its summer habitat. Cranes display diurnal behaviors, differentiating sleeping grounds and feeding territories in wintering areas in South Korea, and mostly feed on plant bulbs, fallen grains and invertebrates in cultivated fields. The Hooded Crane inhabits South Korea only temporarily as a migratory stopover; however, the population of Hooded Cranes has been increasing recently. Of the cranes inhabiting South Korea, the Red-crowned Crane and Siberian Crane are globally endangered species. The Red-crowned Crane is protected and designated as both an Endangered Wildlife Class I and Natural Monuments. The Siberian Crane is protected as a critically endangered species on the IUCN Red List.

Of the 216 bird species recorded globally as shorebirds, 70.8% of species belong to the sandpiper or plover family. A total of 63 species and seven families of sandpipers and plovers have been recorded in South Korea, including families such as Recurvirostridae, Charadriidae, Rostratulidae, Jacanidae, Scolopacidae, Glareolidae, and Haematopodidae belonging to the order Charadriiformes. Sandpipers and plovers follow the East Asia-Australia Flyway (EAAF) for breeding and wintering and use regions of South Korea as a stopover area. In shallow wetlands, they mainly feed on various meat diets, but

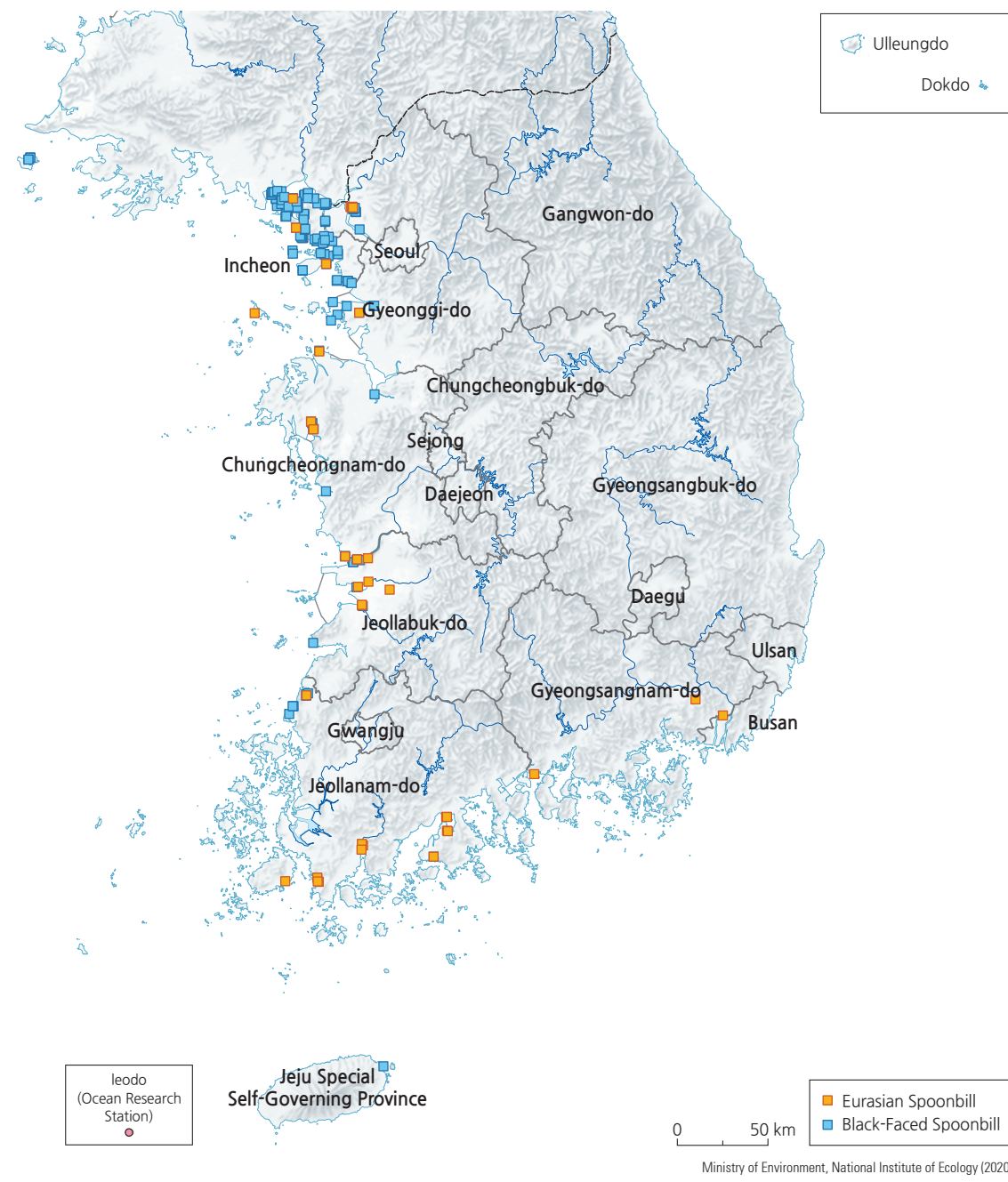
Habitat of Herons



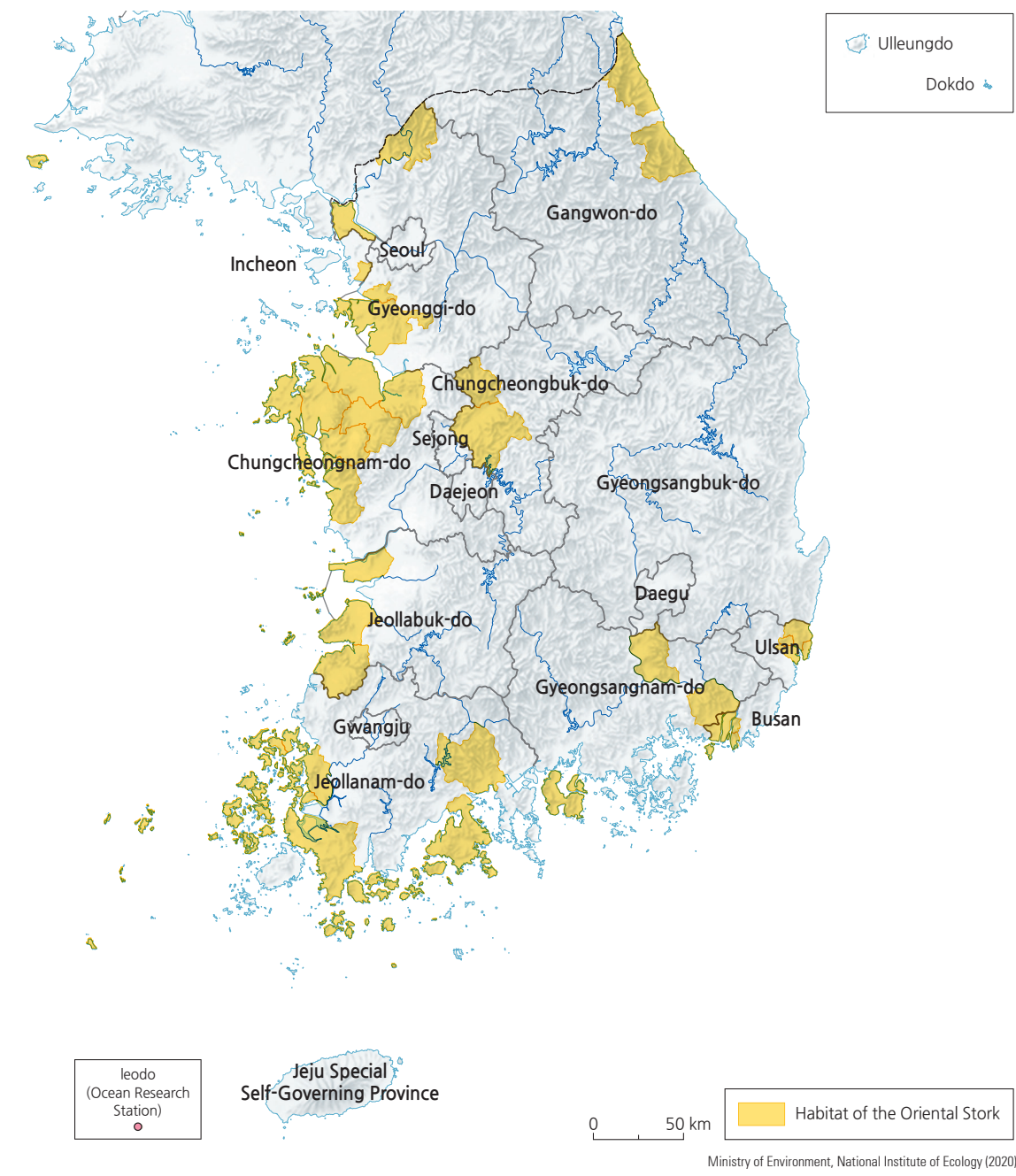
some feed on plants.

Of 72 species of herons worldwide, 18 species inhabit South Korea. The nine common species are the Black-crowned Night Heron, Grey Heron, Chinese Pond Heron, Eastern Cattle Egret, Pacific Reef Heron, and Chinese Egret, which breed around low hilly forests near villages or in the woodlands of uninhabited islands. The Chinese Little Bittern and Schrenk's Bittern breed in emerging plant communities. The Green-Backed Heron breeds in woodlands. Records from 2009 indicate sightings of the Japanese Night Heron breeding in Jeju and Gubongsan of Busan. While rarely spotted, the spring and autumn migratory seasons are the time of year to occasionally see the Cinnamon Bittern, Black Bittern, and Purple Heron. In contrast, the Eurasian Bittern is rarely spotted during the winter season. A single individual of the Malayan Night Heron species was rescued in Gusan-si in 2006.

Distribution of the Spoonbills



Habitat of the Oriental Stork



Of the 36 species of spoonbills in the world, five species inhabit Korea. They live in shallow wetlands, such as tidal flats, rice paddies, and estuaries, and eat small fish, shrimp, amphibians, aquatic insects, and worms. Black-faced Spoonbill breed mainly on uninhabited islands at the border between South Korea and North Korea. They also breed on the west coast of the Korean Peninsula, such as Chilsando in Yeongwang-gun, Gakshibawi Rock at the southern end of Ganghwa-gun, and an artificial island within the Namdong retarding reservoir of Incheon. In 1994, Black-faced Spoonbill were in danger of extinction as only about 300 survived in the world. Since then, the population has steadily increased due to global protection efforts, and it is now more than 4,000. Black-faced Spoonbill are summer migratory birds, but less than 40 of them pass the winter in Jeju. The Eurasian Spoonbill is an uncommon

winter migratory bird. They pass the winter in the reclaimed area of Cheonsu Bay, Junam Reservoir, Suncheon Bay, and the Hangang estuary from mid-October to the end of March of the following year. Of the 19 species of storks, two species, Oriental Stork and Black Stork, inhabit Korea. They feed on fish, amphibians, and reptiles, such as loaches, frogs, and snakes in rice paddies, shallow rivers, agricultural lands, and wetlands. In April 1970, after the death of an Oriental Stork in Eumseong, Chungcheongbuk-do, wild storks were extirpated from Korea. A restoration project has been underway since 1996. Thirty-eight Oriental Storks were introduced from Russia, Germany, and Japan, and approximately 160 Oriental Storks have been artificially propagated. Sixty-seven of them have been released into the wild. Since 2016, 53 storks have hatched in the wild. Black Stork breed on rocky cliffs at the edge of

forests. After breeding was confirmed in Gasong-ri, Andong-gun, Gyeongsangbuk-do in 1968, Black Stork that breed domestically have disappeared. Currently, Black Stork become winter migratory birds. A small number of them pass the winter in Dongbok Lake in Hwasun-gun, Jeollanam-do and Naeseongcheon in Yeongju-si and Yecheon-gun in Gyeongsangbuk-do.



Black-Faced Spoonbill

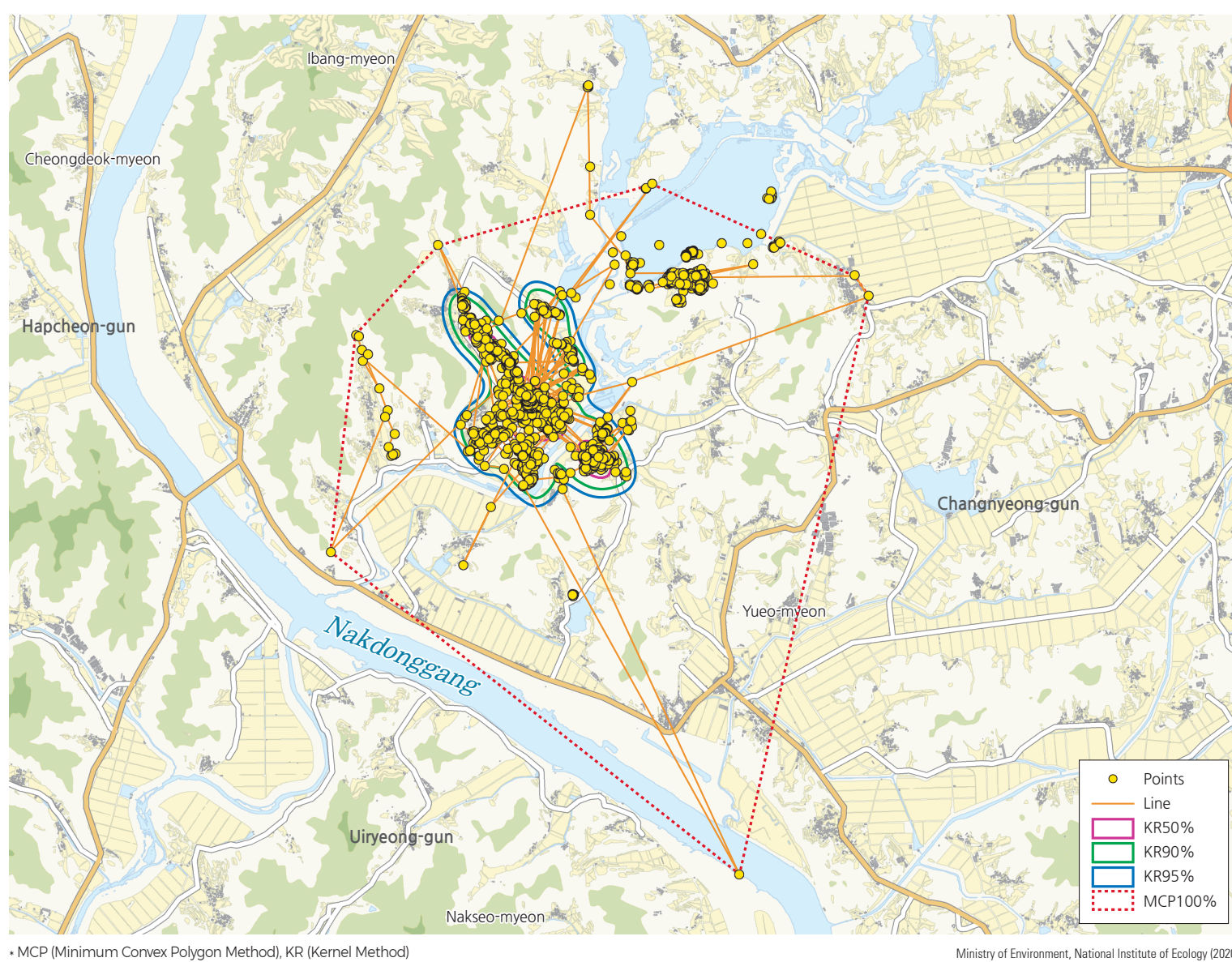


Oriental Stork



Crested Ibis

Distribution of Crested Ibis in Upo Wetlands

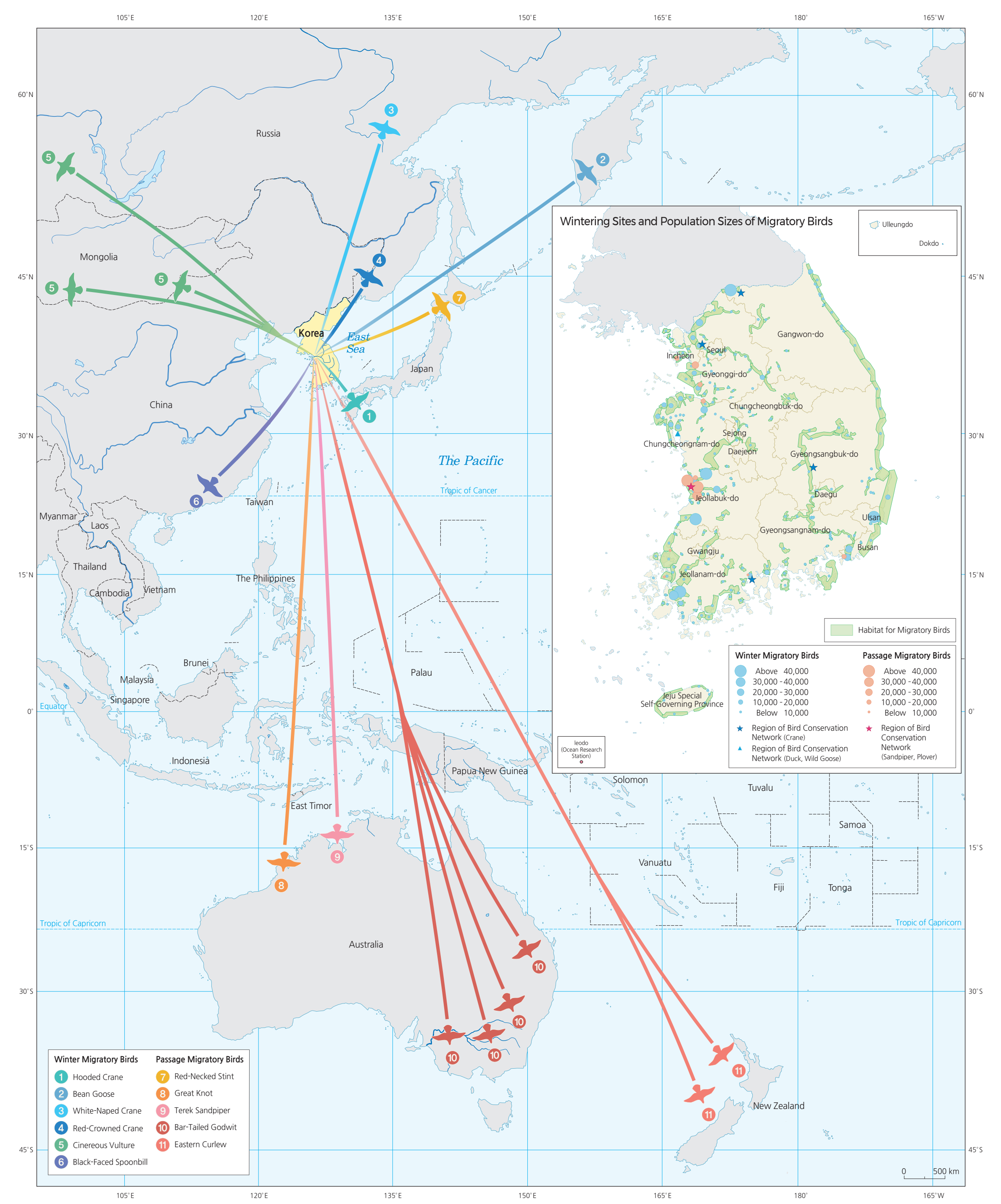


•MCP (Minimum Convex Polygon Method), KR (Kernel Method)

Ministry of Environment, National Institute of Ecology (2020)

Flyway of Major Migratory Birds

Flyway



- | Winter Migratory Birds | Passage Migratory Birds |
|-------------------------|-------------------------|
| 1 Hooded Crane | 7 Red-Necked Stint |
| 2 Bean Goose | 8 Great Knot |
| 3 White-Naped Crane | 9 Terek Sandpiper |
| 4 Red-Crowned Crane | 10 Bar-Tailed Godwit |
| 5 Cinereous Vulture | 11 Eastern Curlew |
| 6 Black-Faced Spoonbill | |

Many migratory birds visit and use the Korean Peninsula as wintering, breeding, and stopover sites. In particular, shorebirds that pass the winter in Australia and New Zealand and then migrate to Siberia for breeding usually visit to feed in the tidal flats of the west coast of Korea in spring and autumn.

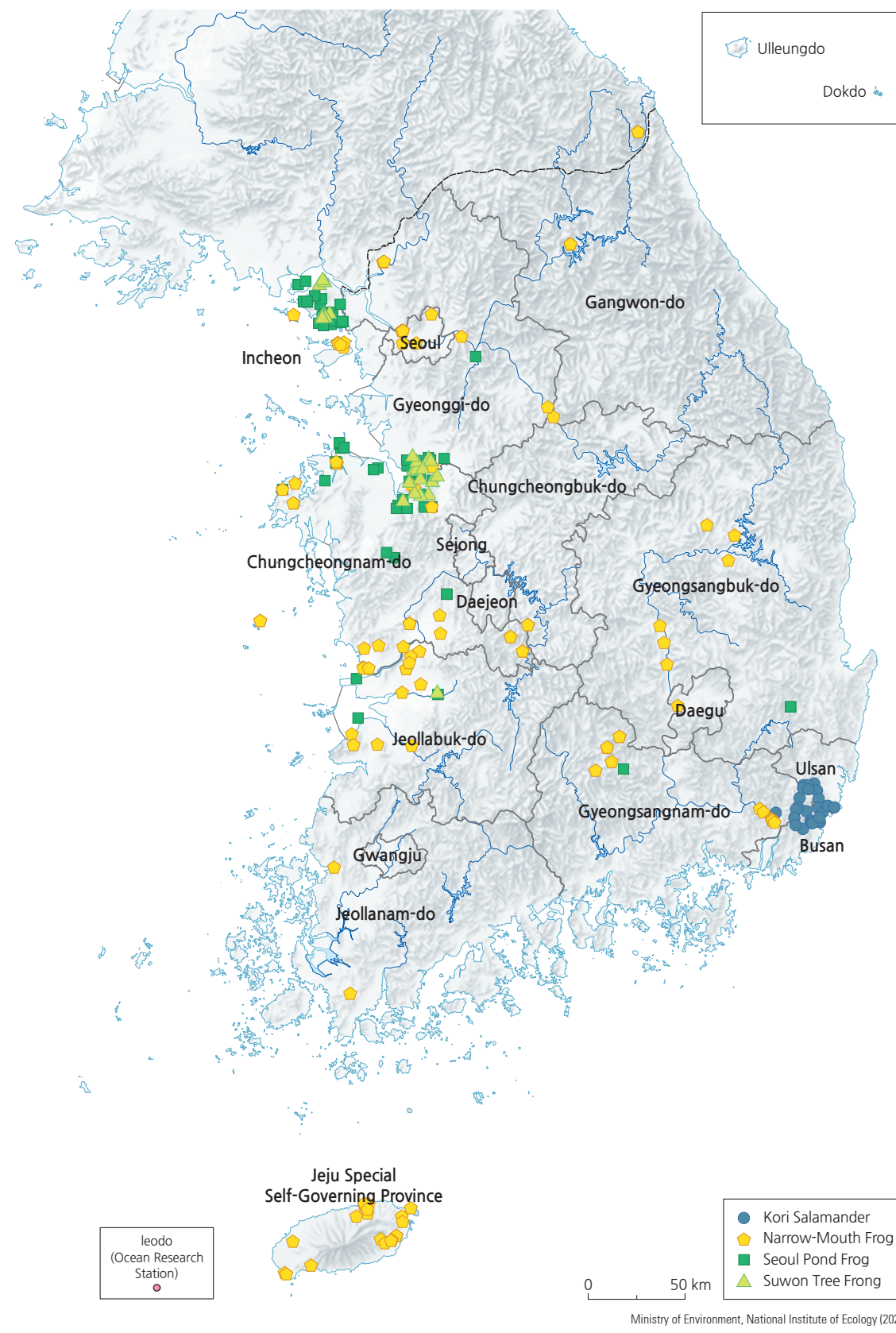
Among the nine flyways used by migratory birds worldwide

for breeding and wintering, Korea is included in the East Asian-Australasian Flyway (EAAF). Small birds of the order Passeriformes visit the southwestern coastal islands of Korea while traveling between wintering areas in southern China and Southeast Asia and breeding grounds in Korea, Mongolia, China, and Russia along this flyway in spring and autumn. According to

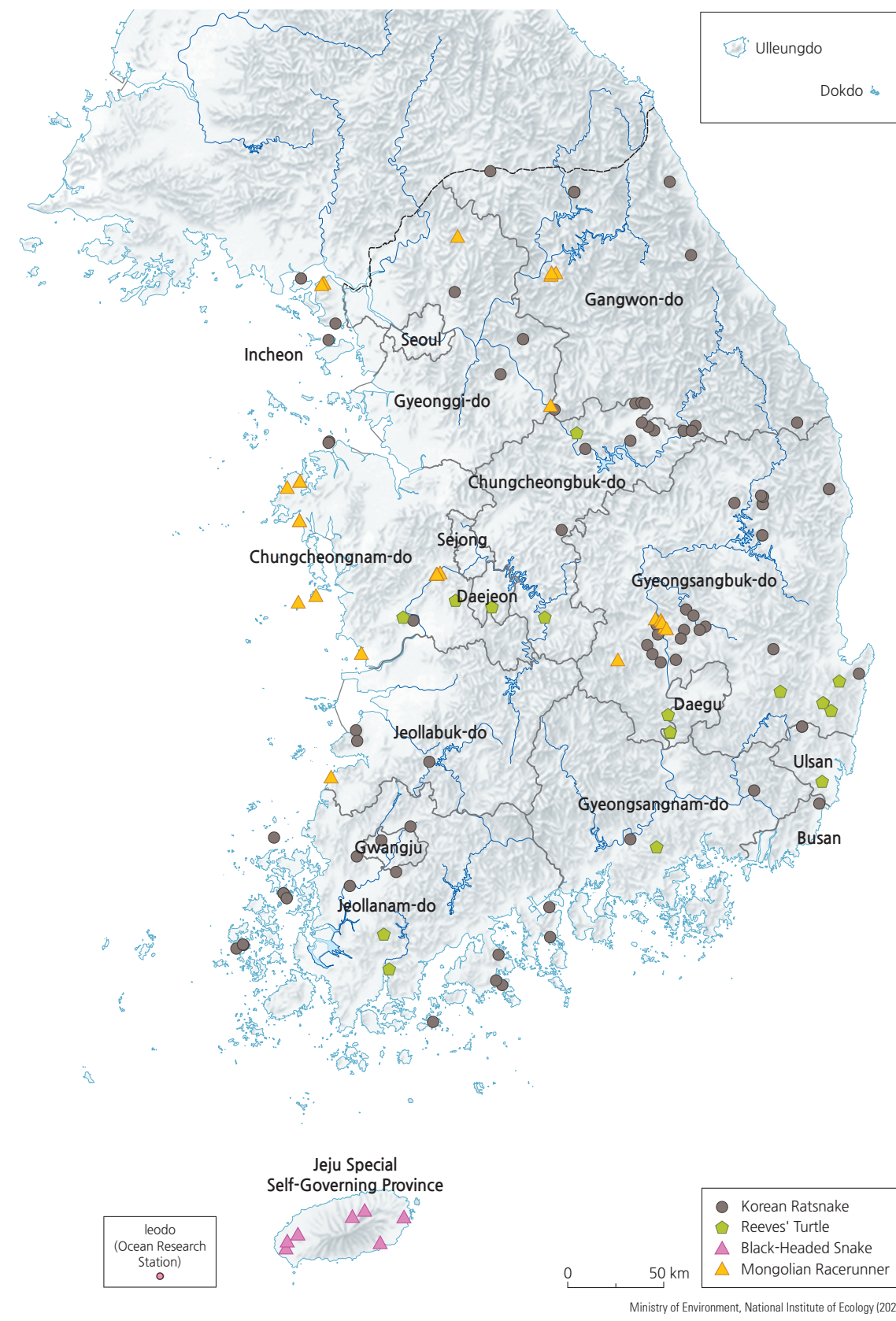
the Bird Research Center of the Korea National Park Service, more than 370 species have been confirmed to pass through this flyway periodically in spring and autumn. Islands are very important as a stopover for these small migratory birds. The National Migratory Bird Research Center conducts research on the migration of birds across islands.

Amphibians and Reptiles

Distribution of Endangered Amphibian Species

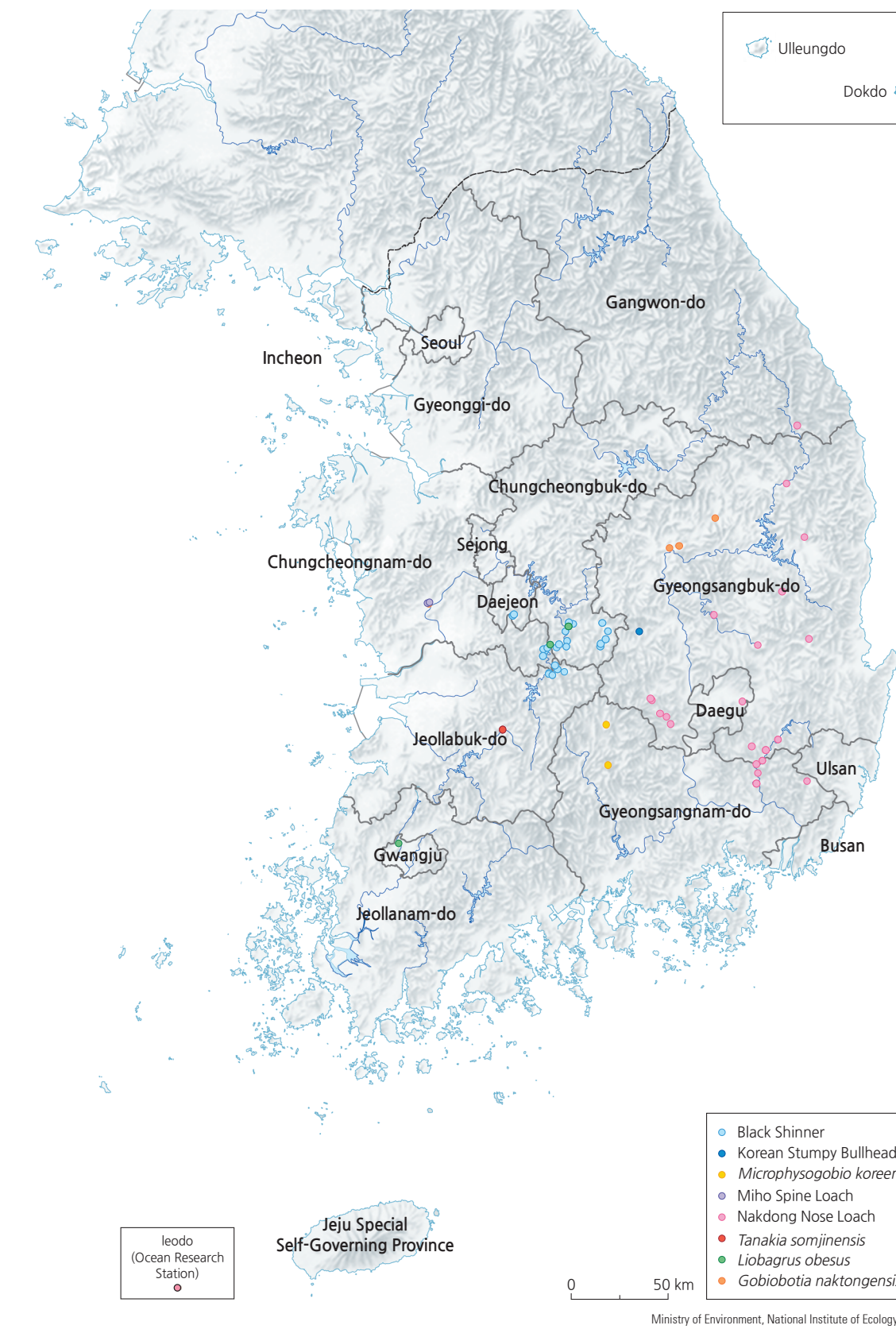


Distribution of Endangered Reptile Species

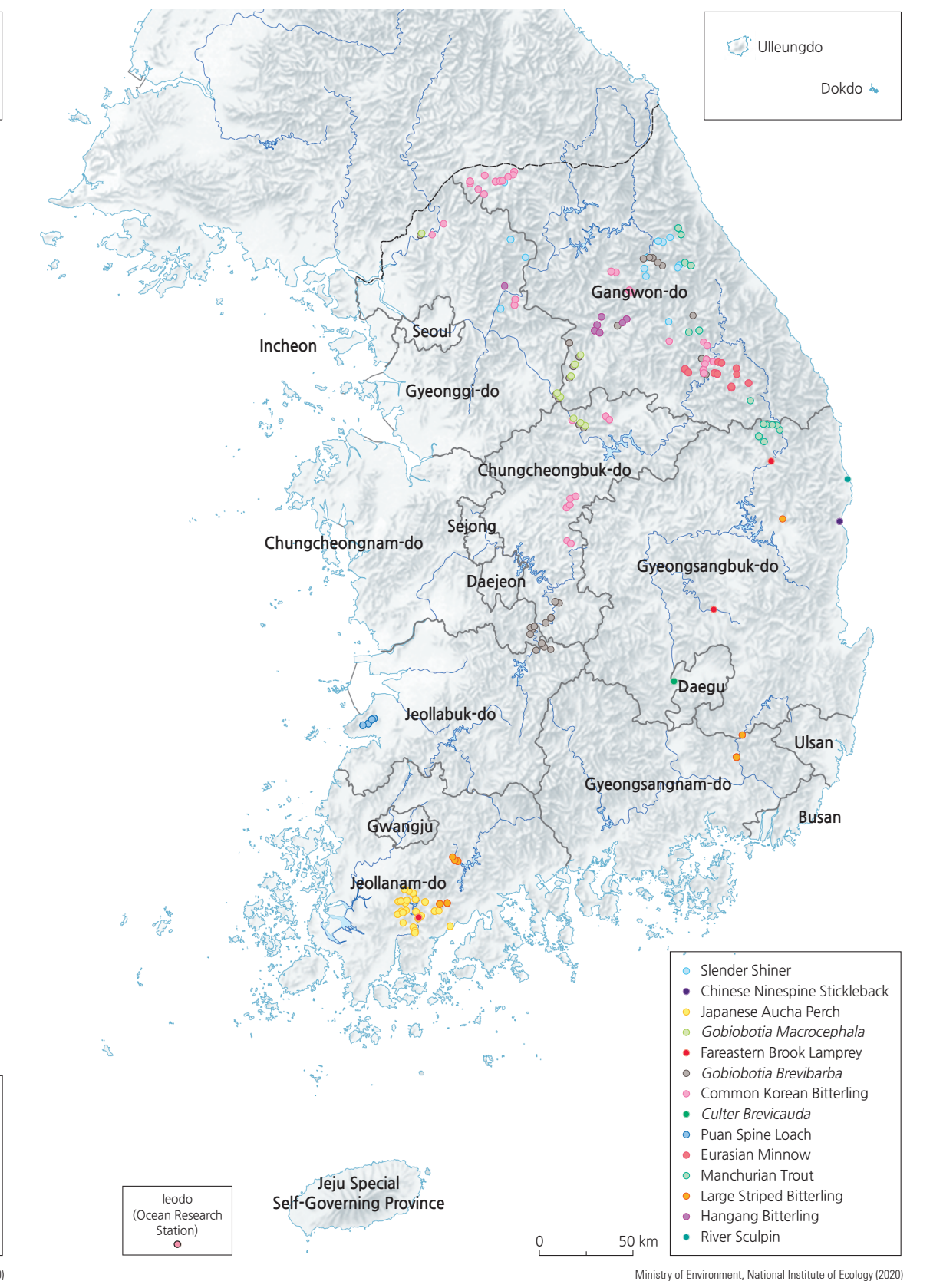


Freshwater Fish

Distribution of Endangered Freshwater Fish Class I



Distribution of Endangered Freshwater Fish Class II



Gori Salamander
(*Hynobius yangi*)

Inhabits certain regions of Gyeongsangnam-do, distributed around woodlands and cultivated lands. Its full length is 7-12 cm, while its length from mouth to cloacal cavity is 4-6 cm. Mostly nocturnal, it feeds on earthworms, arachnids, aquatic insects, and insects such as ants, beetles, and crickets. Lifespan is 10-11 years. An Endangered Wildlife Class II and Korean endemic species.



Korean Crevice Salamander
(*Karsenia koreana*)

Inhabits the woodlands of Chungcheong-do, Jeollabuk-do, Gyeongsangnam-do, and Gangwon-do. Mostly found under fallen leaves or old trees and under stones around valleys or streams that are dense with large trees. Its full length is 6-10 cm, while its length from mouth to cloacal cavity is 3-5 cm. A Korean endemic species.



Jeju Salamander
(*Hynobius quei/partensis*)

Inhabits parts of Jeju-do and the west and south coasts of Korea. Distributed around agricultural waterways in cultivated lands and woodlands, and regions surrounding pools and woodlands. Its full length is 9-14 cm, while its length from mouth to cloacal cavity is 5-7 cm. Feeds on earthworms, arachnids, aquatic insects, and insects such as ants, beetles, and crickets. Its lifespan is 9-10 years. A Korean endemic species.



Korean Brown Frog
(*Rana coreana*)

Distributed throughout South Korea, excluding Jeju-do. Inhabits rice fields, agricultural waterways, wetlands, pools surrounding plains and grasslands, and nearby woodlands. The smallest among other brown frogs, its length from mouth to cloacal cavity is 3.5-5.0 cm. A Korean endemic species.



Korean Ratsnake
(*Elaphe schrenckii*)

Inhabits regions throughout South Korea, except Jeju-do. Distributed mostly in woodlands, cultivated lands, and villages along coasts and islands. Frequently exhibits camouflage coloring, depending on individuals. Scales at the central part of the torso are generally in 23 rows. All of the 23 rows except 3-5 rows from the outer edges contain mastodon bones. An Endangered Wildlife Class II.



Black-Headed Snake
(*Sibynophis chinensis*)

Known to be distributed only in the grasslands of Jeju-do. It is the smallest and thinnest snake in South Korea. Displays physical characteristics similar to the Asian keelback (*Amphispnea vibakari rufveni*), but with a wide black pattern from the crown to the nape. Mostly feeds on small reptiles and small snakes such as the Walter lizard (*Takydromus walteri*). An Endangered Wildlife Class I.



Mongolian Racerunner
(*Eremias argus*)

Distributed throughout South Korea, except Jeju-do. Inhabits grasslands near rivers, coastal areas near beaches, grassy areas of sand dunes, and nearby tombs or bare ground in grasslands. Compared to other lacertids, it has a similar tail and body length but a larger head size. There are usually 11 pairs of femoral pores in the scales of the groin. An Endangered Wildlife Class II.



Reeves' Turtle
(*Mauremys reevesii*)

Found in rice fields throughout South Korea, excluding Jeju-do. It has a pattern of multiple green stripes running from behind each eye to the neck. Omnivorous, it feeds on insects, gastropods, crustaceans, fish, and aquatic plants. Lays 4-15 eggs in June and July in burrows in grasslands near rivers. An Endangered Wildlife Class II.

A total of 32 species of reptiles and 21 species of amphibians inhabit South Korea. The Ministry of Environment designated the Black-headed Snake and Suwon Treefrog as Endangered Wildlife Class I. The Gori Salamander, Rat Snake, Korean Golden Frog, Reeve's Pond Turtle, Narrow-mouthed Frog, and Mongolian Racerunner are designated as Endangered Wildlife Class II. Six species, including the Gori Salamander, Korean Crevice Salamander, Suwon Treefrog, Jeju Salamander, Korean Brown Frog, and Korean Golden Frog, are known to be endemic to South Korea. Recently, the number of amphibians and reptiles has declined rapidly due to changes in the habitat environment caused by climate change.



Black Shiner (*Pseudopungtungia nigra*)

Inhabits midstream and upstream areas of rivers with pebble and large stone beds, laying eggs in the breeding places of *Coreoperca herzi*. Endemic to South Korea, distributed in the mid- and upstream areas of the Geumgang, Mangyeonggang, and Ungcheoncheon.



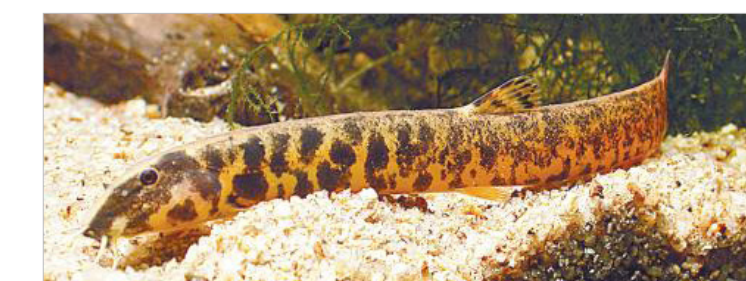
Korean Stumpy Bullhead (*Pseudobagrus brevicarpus*)

Nocturnal, inhabits downstream pools with high water clarity and pebble or large stone beds. Endemic to South Korea, displaying limited distribution in the waters of certain parts of the Nakdonggang, designated as Natural Monument Number 455.



Miho Spine Loach (*Cobitis choi*)

Inhabits slow-flowing, shallow water with sand beds. Species endemic to South Korea designated as Natural Monument Number 454. Distributed in certain parts of the Geumgang Basin.



Nakdong Nose Loach (*Koreocobitis naktongensis*)

Inhabits mid- and upstream areas of fast-flowing rivers with pebbles or large stone beds. Endemic to South Korea, distributed in limited areas of the Nakdonggang Basin.



Gobiobotia naktongensis

Inhabits midstream river beds in areas with rapids and pebbles or large stones. Endemic to South Korea, distributed in the Nakdonggang, Hangang, Geumgang, and Imjingang.



Japanese Aucha Perch (*Coreoperca kawamebari*)

Inhabits the mid- and upstream areas of slow-flowing rivers with abundant aquatic plants, large stone, sand, and pebble beds. Distributed only in the Tamjingang watershed.



Puan Spine Loach (*Iksookimia pumila*)

Inhabits the beds of clear, slow-flowing streams with abundant rocks, pebbles, and sand. Endemic to South Korea, distributed only around the Baekcheon in Buan-gun, Jeollabuk-do.

A total of 17 orders, 39 families, 220 species of freshwater fish inhabit South Korea. Among them, 11 species have been designated as Endangered Wildlife Class I by the Ministry of Environment, including the Black Shiner, Korean Stumpy Bullhead, Donko, Miho Spine Loach, Nakdong Nose Loach, *Microphysogobio rapidus*, *Acheilognathus somjinensis*, Bullhead Torrent Catfish, and *Gobiobotia naktongensis*.

16 species are designated as Class II Endangered Wildlife, including the Slender Shiner, Amur Stickleback, Japanese Aucha Perch, *Gobiobotia macrocephala*, Far Eastern Brook Lamprey, *Gobiobotia brevivirba*, *Acheilognathus signifer*, *Culter brevicauda*,

Rhynchocypris semotilus, Puan Spine Loach, and Lenok.

Korean endemic freshwater species have adapted to diverse habitats attributable to geological changes and geographical features of the Korean Peninsula. There are 66 freshwater fish species endemic to South Korea, accounting for 30% of the total freshwater fish species, including the *Rhodeus uyekii*, *Iksookimia longicarpa*, *Iksookimia hugowolfeldi*, *Iksookimia yongdokensis*, *Iksookimia pacifica*, Black Bullhead, Slender Catfish, *Pungitius kaibarae*, *Odontobutis platycephala*, and Korean Perch.

Insects



Long-Horned Beetle (*Callipogon relictus*)



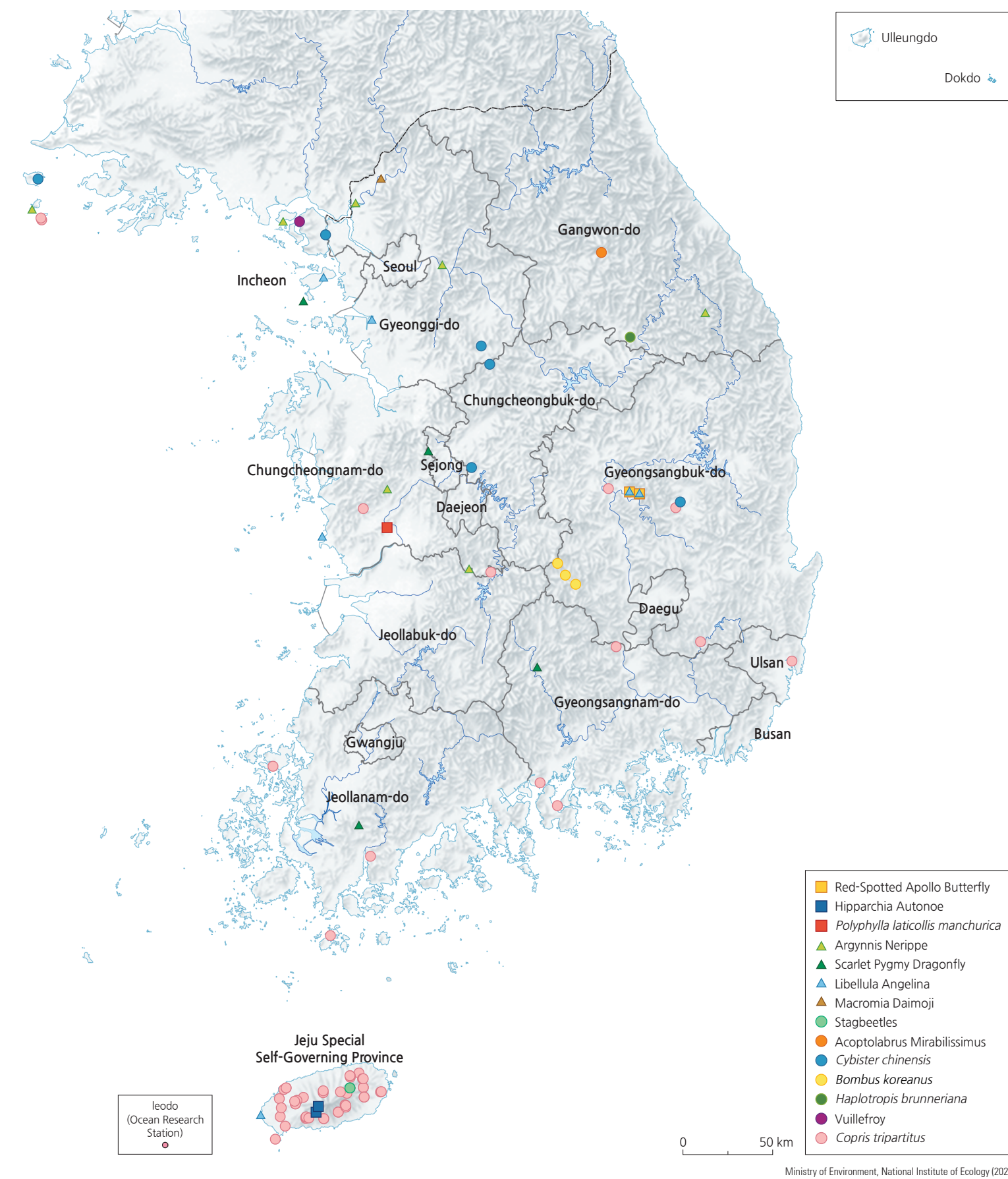
Vullefroy (*Lethocerus deyrolli*)

In 2019, the National List of Species of Korea recorded a total of 588 families, 6,724 genera, 18,092 species of insects in the subphylum Hexapoda consisting of superclass Ectognatha including class Insecta and superclass Entognatha including class Collembola, class Protura, and class Diplura as native to the Korean Peninsula.

Of the species that have been recorded, the order Coleoptera (4,520 species), the order Lepidoptera (4,019 species), and the order Hymenoptera (3,806 species) have higher species diversity and account for approximately 68% of the total species, followed by the order Diptera (2,226 species) and the order Hemiptera (2,140 species), accounting for approximately 24%.

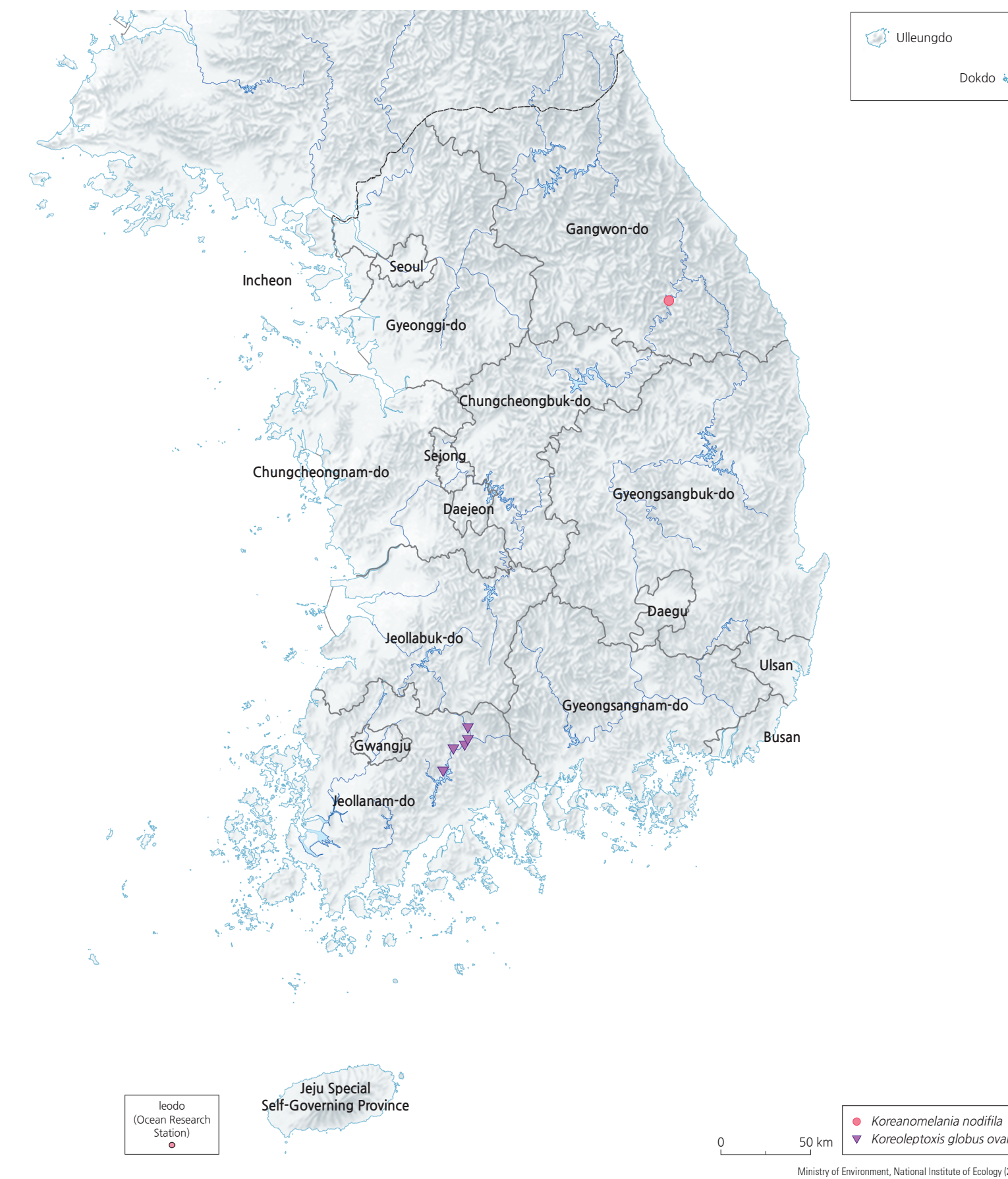
The Ministry of Environment has designated 6 insect species as Endangered Wildlife Class I, including Jewel Beetles and Black-veined White. 20 species are designated under Class II, including Scarlet Dwarf, Bekko Tombo, and Dung Beetle. Among these, the following species have been designated as Natural Monuments: *Callipogon relictus* (Natural Monument No. 218), *Hipparchia autonoe* (Natural Monument No. 458), and Jewel Beetles (*Chrysochroa coreana*; Natural Monument No. 496).

Distribution of Endangered Insect Species



Benthic Macroinvertebrate Species

Distribution of Endangered Benthic Macroinvertebrate Species



Benthic macroinvertebrates include Phylum Platyhelminthes, Nematomorpha, Mollusca, Annelida, and Arthropoda. Arthropoda is the most abundant in species, with over 70% of the benthic macroinvertebrate species. Among Arthropoda, aquatic insects such as the Mayfly and Dragonfly are most abundant.

The benthic macroinvertebrates living in freshwater include 7 phyla, 13 classes, 37 orders, 146 families, 749 species. 95 species are endemic to the Korean Peninsula. The Cockscomb Pearl Mussel, Knobbed Triton, *Pseudohelice quadrata*, and *Lamprotula coreana* are designated as Endangered Wildlife Class I. 31 species are designated as Class II, including the Orange Cup Coral.

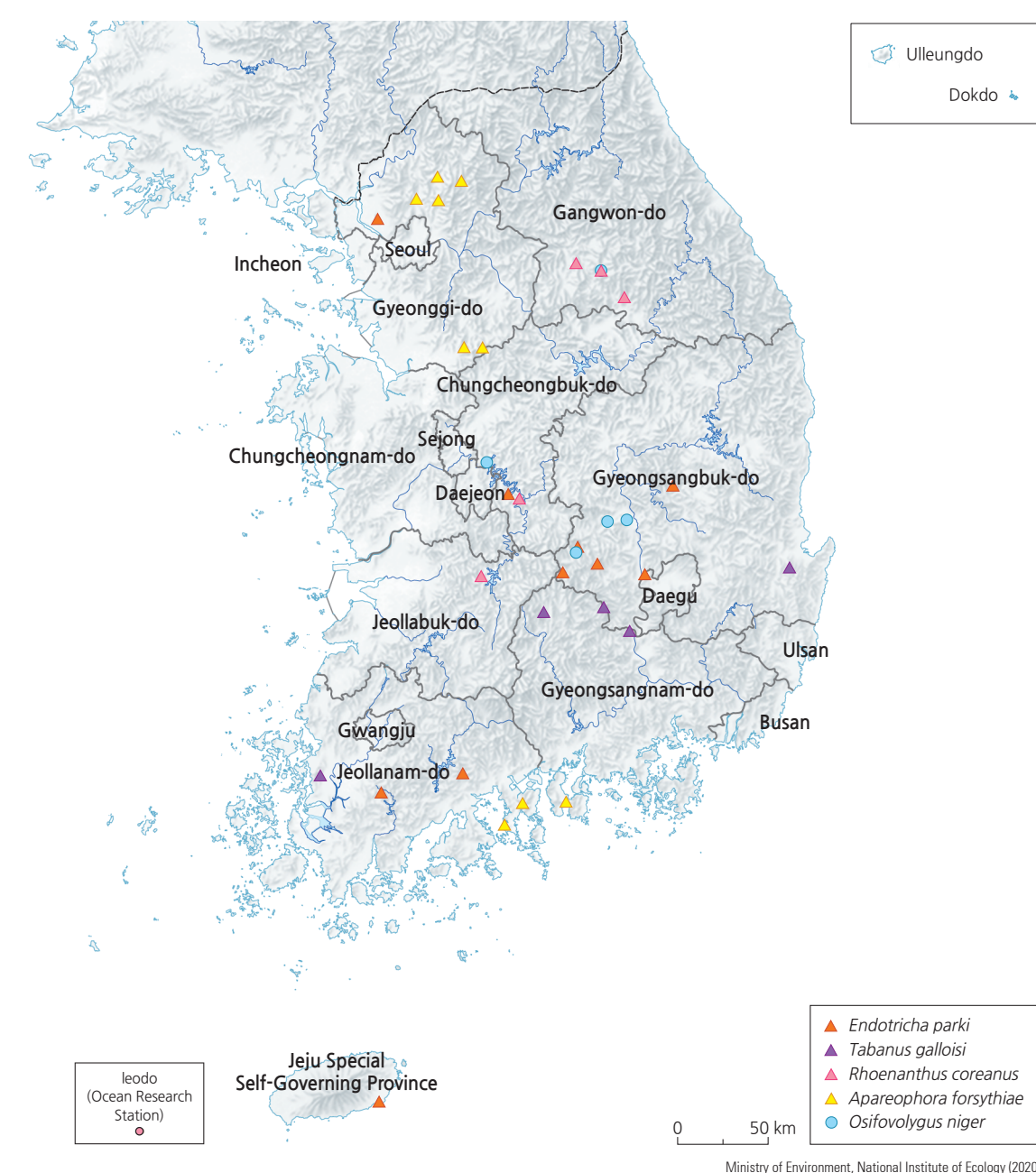


Koreanomelania nodifila
Species endemic to South Korea. Distributed around central regions such as Gangwon-do and Chungcheongbuk-do. Population decrease led to its designation as Endangered Wildlife Class II by the Ministry of Environment.

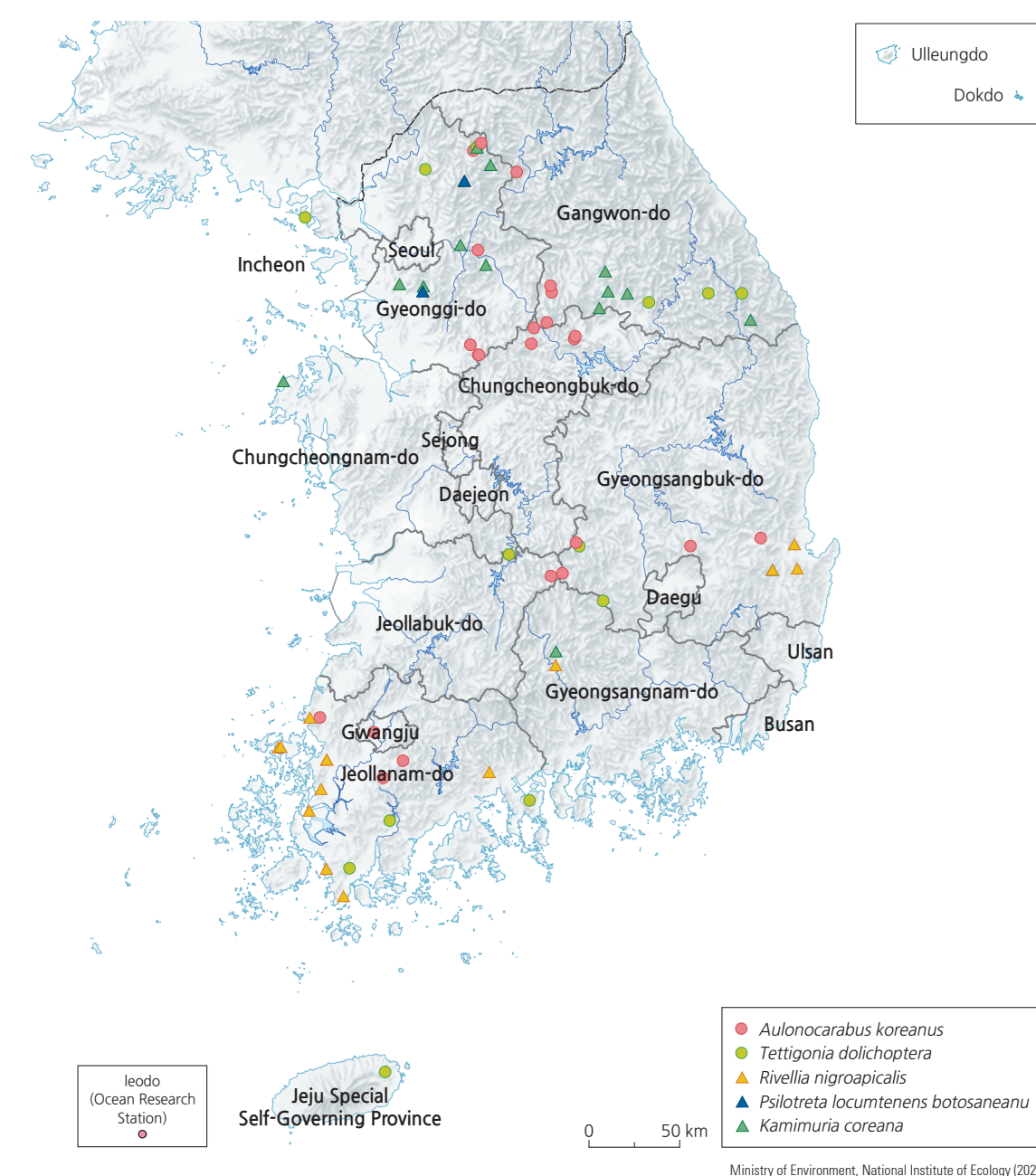


Lamprotula coreana
Distributed in certain parts of the Geumgang and Boseongang. Population decrease led to its protection and designation as an Endangered Wildlife Class I by the Ministry of Environment.

Distribution of Endemic Insect Species (1)



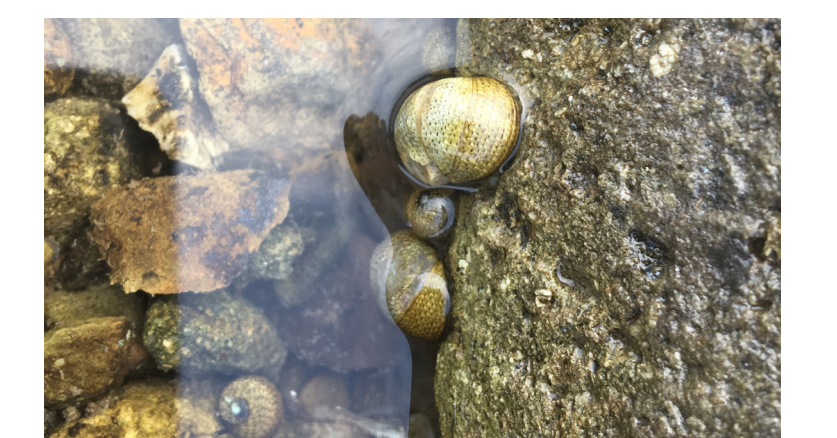
Distribution of Endemic Insect Species (2)



Cristaria plicata
Freshwater bivalve belonging to the family Unionidae. The largest freshwater shellfish in Korea. Inhabits the mud of large rivers, lakes, agricultural waterways, swamps, and reservoirs in the south of the Korean Peninsula. The depth of habitation is 0.2 m to 2 m. It has a dorsal posterior margin projected upward, forming a large triangular sail-like hind wing. It was used for pearl farming in the Nakdonggang. Endangered Wildlife Class I.



Charonia lampas
A gastropod belonging to the family Charoniidae. The largest among univalve shells. It has irregular reddish-brown patterns on the surface of the yellowish-white, very hard and thick shell. It inhabits coastal areas with bedrock or gravels in Gyeongsang-do and Jeju-do. The depth of habitation is 10 m to 200 m. It mainly feeds on starfish. In Jeju-do, it feeds on red starfish. Endangered Wildlife Class I.



Clithon retropictum
A gastropod belonging to the family Neritidae. It is distributed around the west and south coast and in Jeju-do. It inhabits brackish water zones where freshwater and seawater meet. Individuals attach to large stones or gravel, forming a colony, where the water is shallow but the flow velocity is relatively high. Endangered Wildlife Class II.



Ellobium chinense
A gastropod belonging to the family Ellobiidae. Distributed around the salt marsh where *Zostera sinica* grows on the west and south coast. A pulmonate animal that breathes air. It has the characteristics of a land snail that breathes through the lungs with a lung sac and a marine snail resistant to salinity in the brackish water zone. Endangered Wildlife Class II.



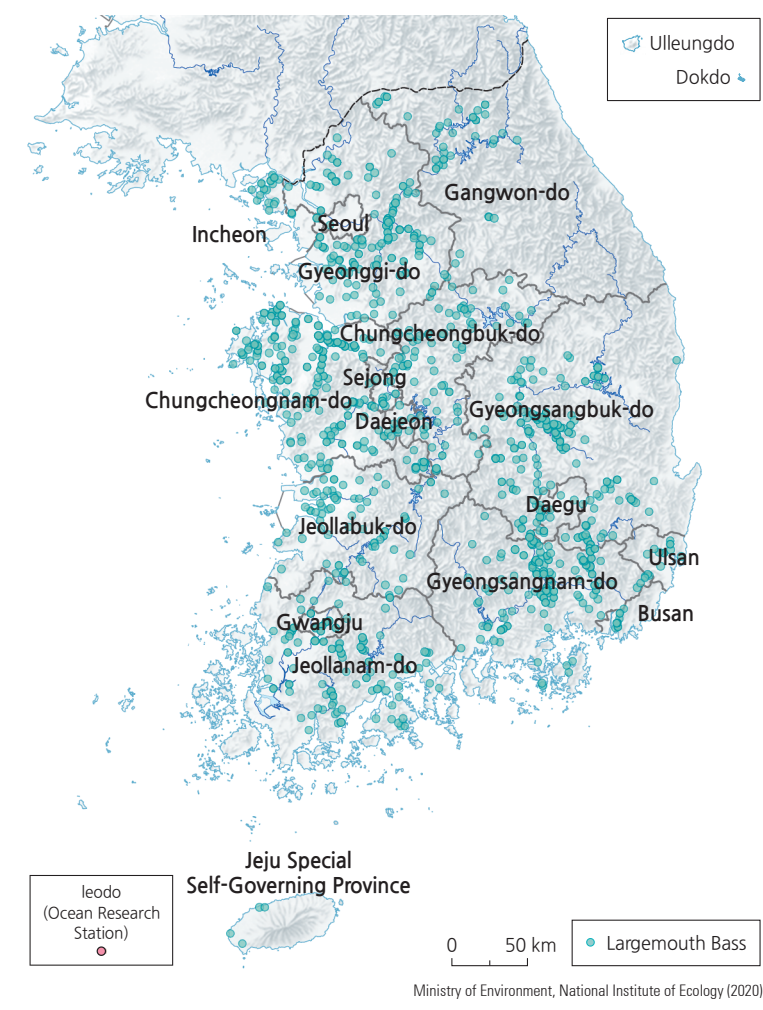
Sesarmops intermedius
A crustacean belonging to the family Sesardiidae. Distributed around the southwest coast and coastal Jeju-do. Rarely, it is found in tidal channels, reed fields, and salt marshes in estuaries. Sometimes the whole body is red. Dark brown bristles are found around the feet. The dorsal surface of the carapace is convex, and the lateral margin has one distinct tooth on the back of the posterior teeth of the eye. Endangered Wildlife Class II.



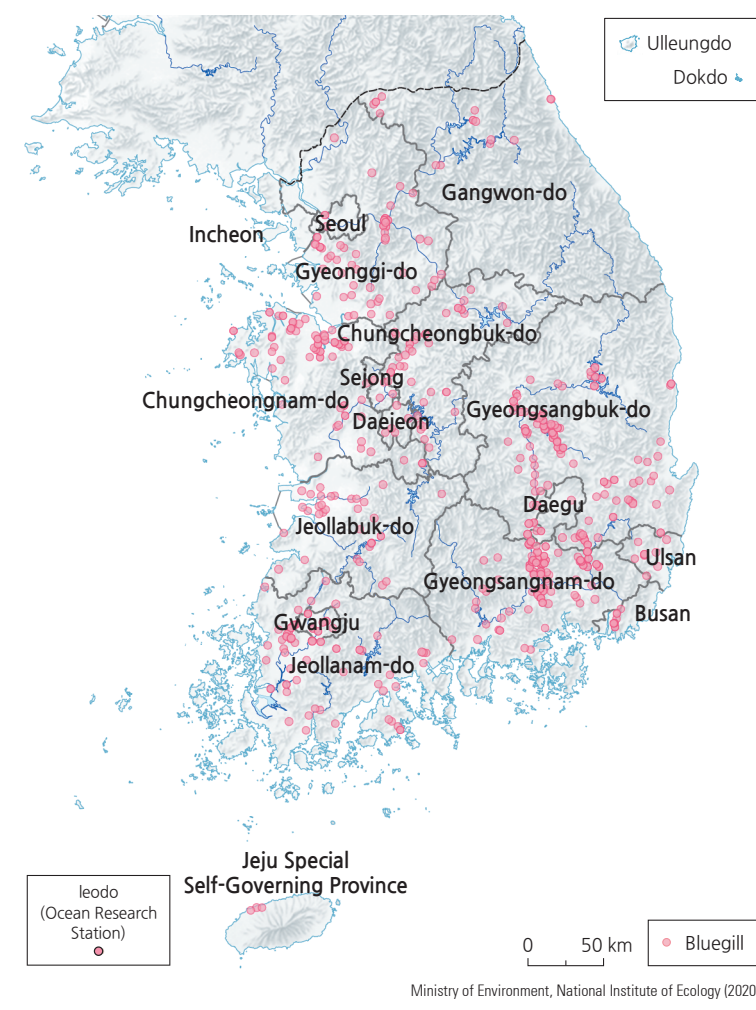
Austruca lactea
A marine crustacean belonging to the family Ocypodidae. It digs holes vertically in the sandy substrates of the upper intertidal zone in the west and south coast. The male has a greatly enlarged claw, and the outer surface of the large claw is smooth and granule free. The large claw is generally white. The female claw is small and symmetrical. Endangered Wildlife Class II.

Ecosystem-disturbing Animals

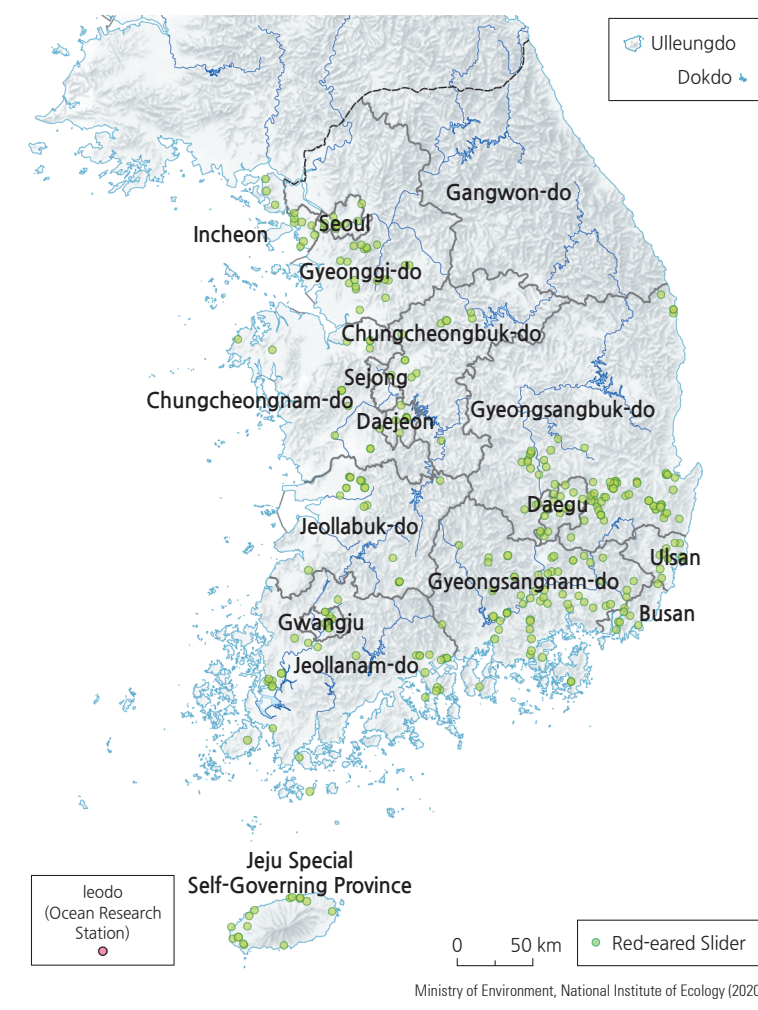
Distribution of Largemouth Bass (*Micropeter salmoides*)



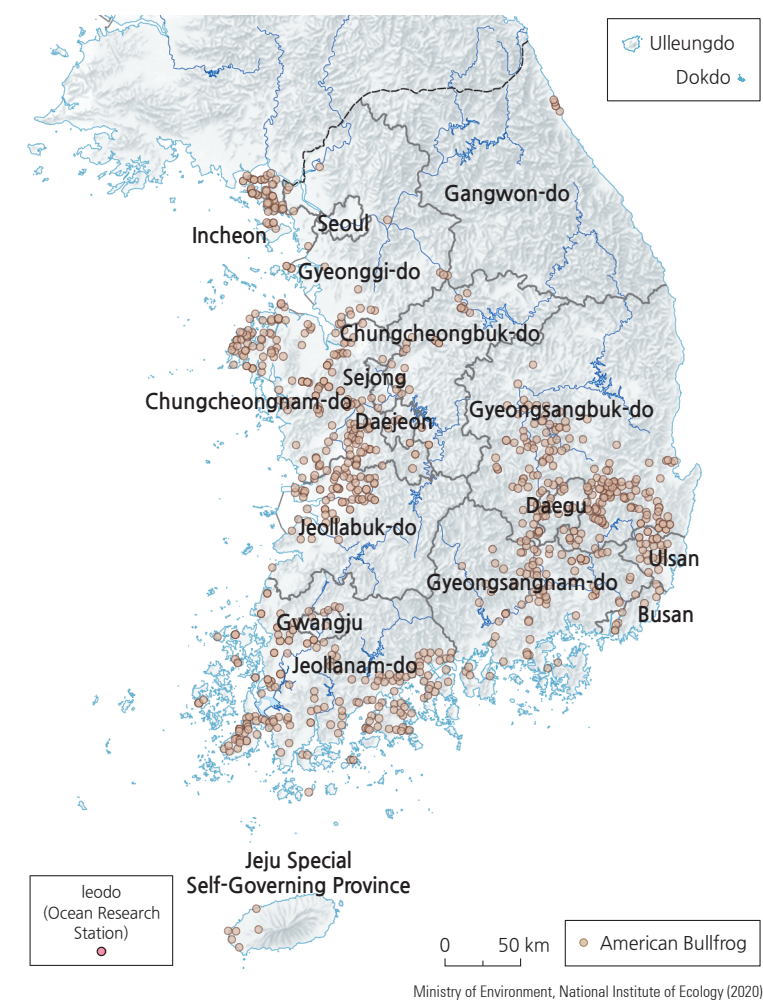
Distribution of Bluegill (*Lepomis macrochirus*)



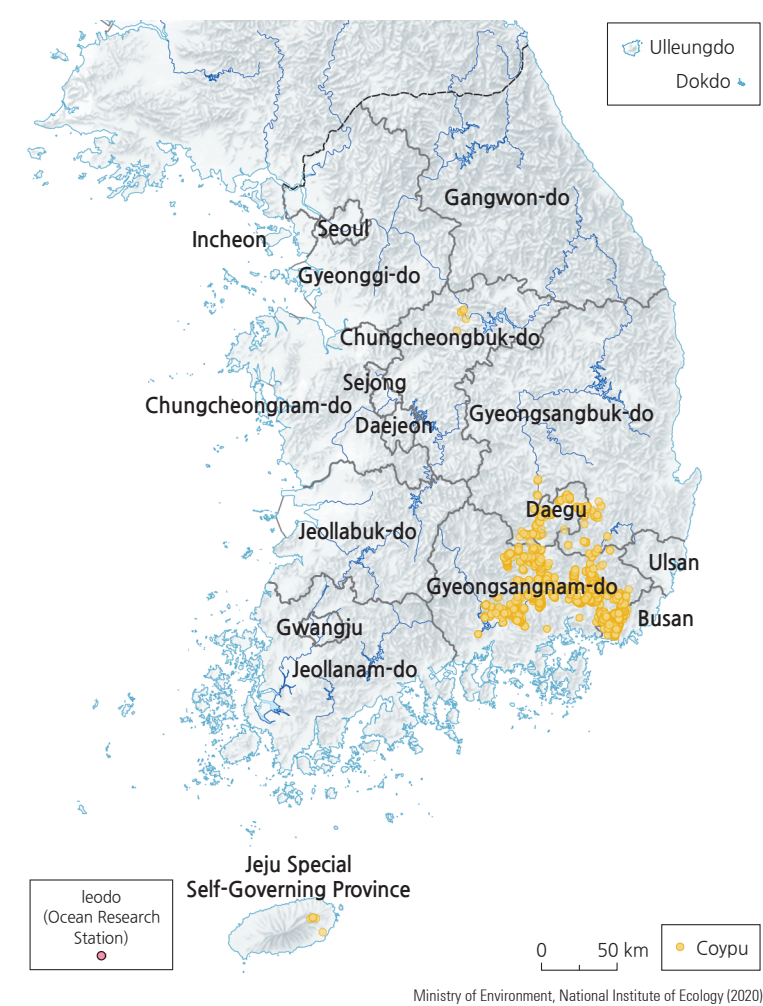
Distribution of Red-Eared Slider (*Trachemys scripta elegans*)



Distribution of American Bullfrog (*Lithobates catesbeianus*)



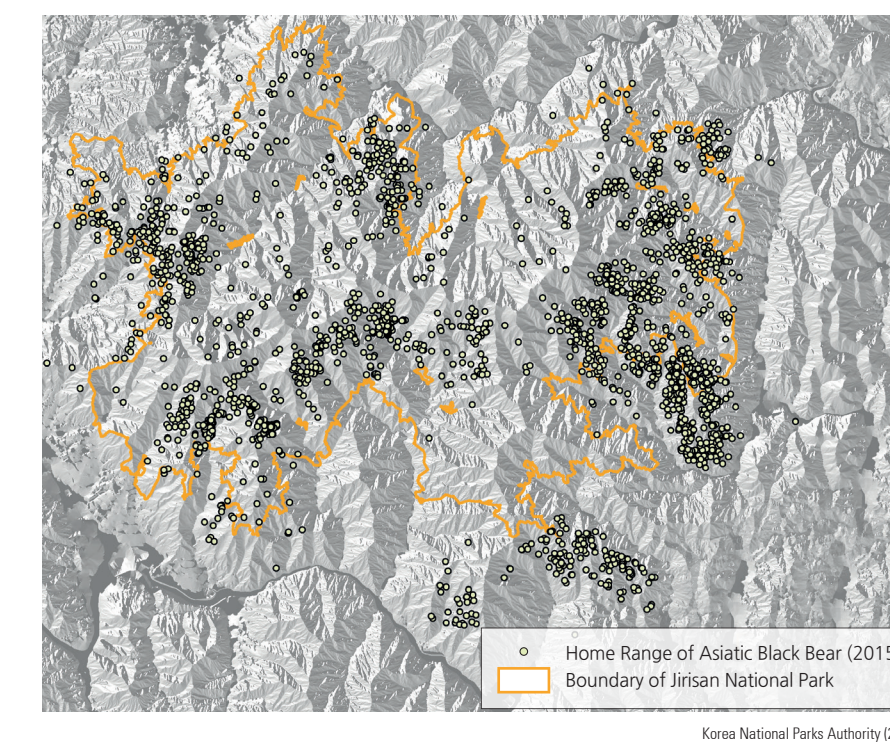
Distribution of Coypu (*Myocastor coypus*)



As global economic growth has influenced the increase in international interactions through activities such as travel and trade, there has been an escalation in the export and import of species valuable to the agriculture and fishing industries, pets, and ornamental alien species. Until 2018, a total of 2,160 alien species, including 1,826 animal species and 334 plant species, were imported into South Korea, which is an increase by approximately 95% compared to 2011; thus, the import of alien species into South Korea is increasing. The appearance of species with the potential for ecosystem disturbance has been increasing, following incidents such as an outbreak of alien invasive species caused by changes in the environment, including climate change. The invasive alien species adapted to Korea are exacerbating disturbances on the ecosystem through their rapid proliferation and thriving feeding ability.

Restoration of Endangered Wildlife and Animal Species around the Demilitarized Zone (DMZ)

Home Range of Asiatic Black Bear (2015)

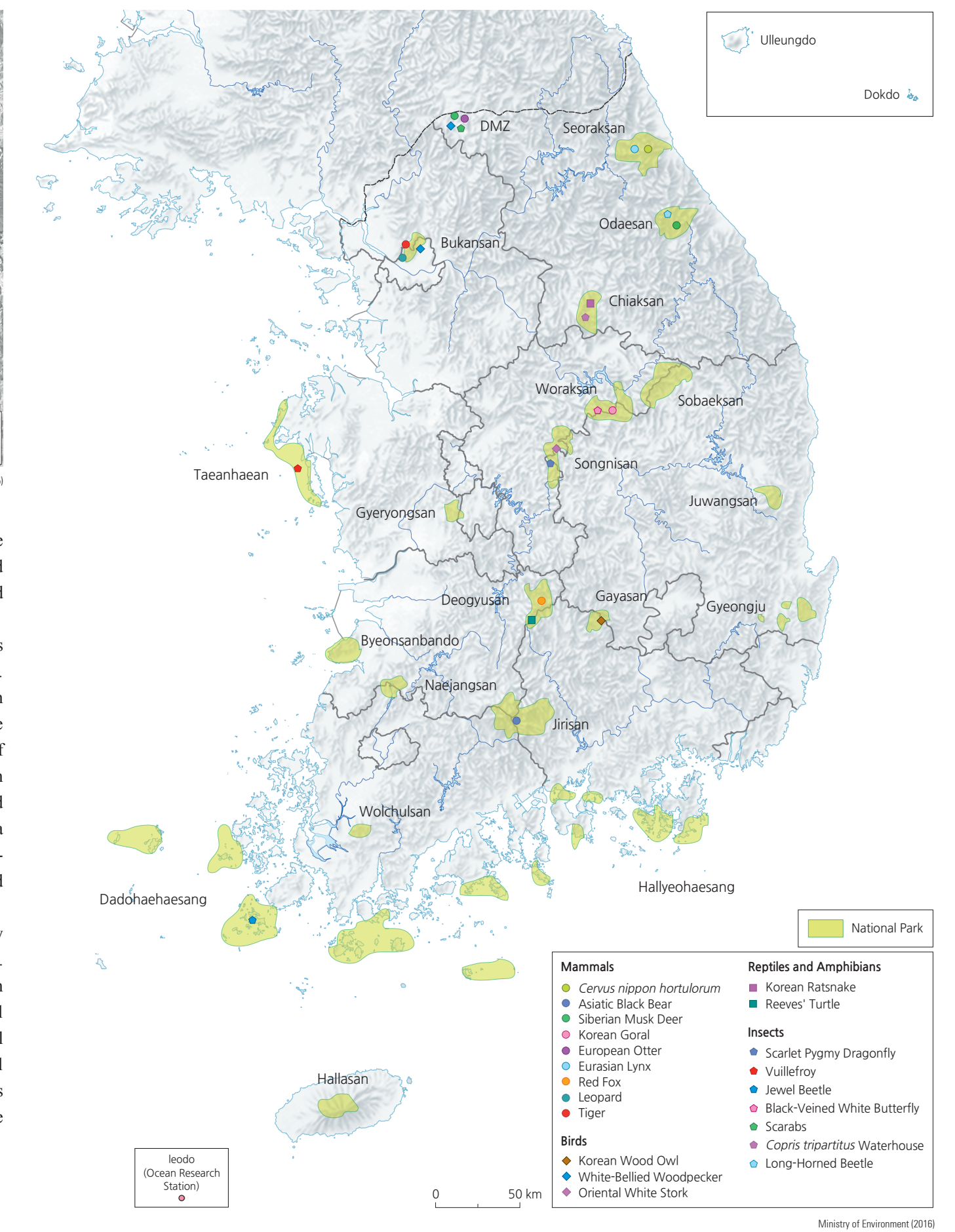


Korea is currently pursuing restoration of Endangered Wildlife, such as the Asiatic Black Bear, Musk Deer, Oriental White Stork, Black Shiner, Bull-head Torrent Catfish, and Wind Orchid. Plans for restoration of these Endangered Wildlife have been carried out.

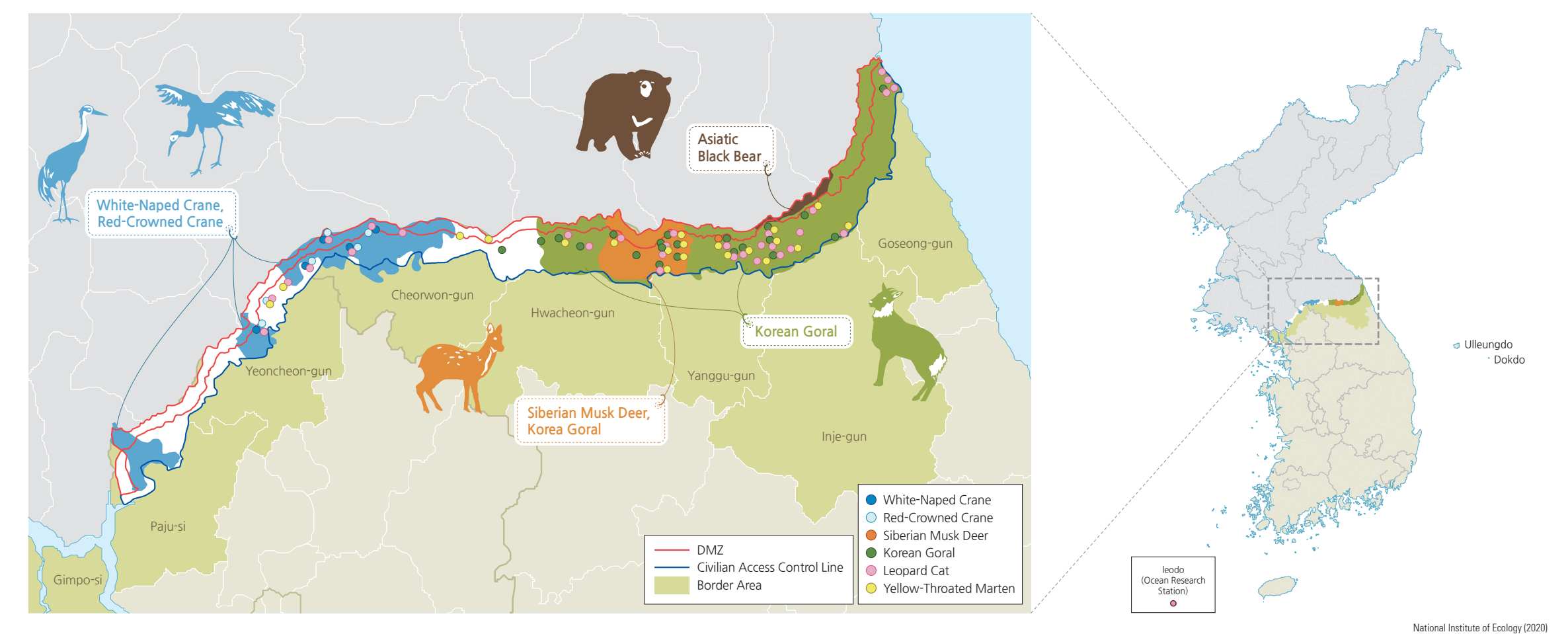
The Asiatic Black Bear once occupied virtually all mountainous areas stretching across major mountains such as Seoraksan, Odaesan, and Jirisan. However, habitat destruction and overhunting brought about a sharp decline in its population. In 1982, the bear was classified as a Natural Monument to be protected from further endangerment. Korea's first measure for the restoration of this species began in 2004 when 6 Asiatic Black Bears were translocated from Russia to Korea's Jirisan National Park. In 2005, 8 bears from North Korea and 6 bears from Russia were further released into the area. As of 2016, there are a total of 44 bears living in Jirisan National Park. In September of 2015, a three-year-old bear was captured in the park, proving that the species has succeeded in natural propagation.

The Oriental Stork is listed as an Endangered Wildlife by the IUCN as it only has a remaining population size of 5,000 in the Amur River basin of Russia. Restoration efforts for the stork initiated in 1996 when 2 Juvenile Storks from Russia and two male storks from Germany were delivered to Korea. In April of 2002, the species succeeded in breeding for the first time in an artificial environment. The eco-institute for Oriental Stork of the Korea National University of Education is currently raising 85 storks, while 77 individuals inhabit the Yesan Oriental Stork Park. The storks at the restoration institute are in the process of undergoing survival training to be released into the wild.

Restoration Areas for Endangered Wild Animal Species



Distribution of Animal Species around the DMZ



The DMZ (Demilitarized Zone) region attracts the world's attention for its well-conserved natural ecosystem due to the strict prohibition of civilian activities. This region has high biological diversity of mammals and birds, along with high density of Endangered Wildlife and Natural Monument species, such as the Asiatic Black Bear, the Siberian Musk Deer, Korean Goral, and the

Eurasian Otter. Streams and wetlands are well developed around the DMZ, displaying diverse and abundant species of fish.

The western region of the DMZ is inhabited by wetland birds, such as the White-naped Crane and Black-faced Spoonbill. The central region of the DMZ is a wide plain that provides wintering areas for the Red-crowned Crane. The eastern mountainous region

is inhabited by the Siberian Musk Deer and Korean Goral.

The Red-crowned Crane visits Cheorwon-gun, Paju-si, Ganghwa-gun, and Yeoncheon-gun for wintering. The Siberian Musk Deer and Korean Goral inhabit the eastern rocky mountainous region of the DMZ. The Siberian Musk Deer is especially low in population, inhabiting only the regions of Hwacheon-gun and Yanggu-gun.