Government Publications Registration Number : 11-1480592-000718-01

Korean Red List of Threatened Species

Second Edition

MINISTRY OF ENVIRONMENT

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National Institute of Biological Resources

Korean Red List of Threatened Species

Second Edition

2014

NIBR

National Institute of Biological Resources

Publisher : National Institute of Biological Resources
Editor in President : Sang-Bae Kim
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Printed by Jisungsa

Government Publications Registration Number : 11-1480592-000718-01
ISBN Number : 9788968111037 93400

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I

Introduction of the Republic of Korea :
Land of the Morning Calm

1. Geography

The Repubulic of Korea (= South Korea) is located in East Asia, on the southern half of the Korean Peninsula jutting out from the far east of the Asian land mass. The only country with a land border to South Korea is North Korea, lying to the north with 238 km of border running along the Korean Demilitarized Zone (DMZ). South Korea is mostly surrounded by water and has 2,413 km of coast line along three seas. To the west is the Yellow Sea, to the south is the East China Sea, and to the east is Ulleung Island and Dok Island in the East Sea. The approximate coordinates are 37° North, 127° 30' East (Ministry of Environment, 2014; http://en.wikipedia.org/wiki/Geography_of_South_Korea).

Fig. 1. Map of the Republic of Korea

The Korean Peninsula extends southward from the northeast part of the Asian continental landmass. The Japanese islands of Honshū and Kyūshū are located some 200 km to the southeast across the Korea Strait; the Shandong Peninsula of China lies 190 km to the west. The west coast of the peninsula is bordered by the Korea Bay to the north and the Yellow Sea and Korea Strait to the south; the east coast is bordered by the Sea of Japan. The 8,640 km coastline is highly indented. Some 3,579

islands lie adjacent to the peninsula. Most of them are found along the south and west coasts.

The line between the two Korean states was the thirty-eighth parallel of latitude. After the Korean War, the Korean Demilitarized Zone (DMZ) formed the boundary between the two. The DMZ is a heavily guarded, 4,000 m-wide strip of land that runs along the Demarcation line established by the Korean Armistice Agreement, from the east to the west coasts for a distance of 241 km (238 km of that line form the land boundary with North Korea).

The total land area of the peninsula, including the islands, is 223,170 km^2. Some 44.6 percent (98,477 km^2) of this total, excluding the area within the DMZ, constitutes the territory of the Republic of Korea. The combined territories of North Korea and South Korea are about the same size as the state of Minnesota. South Korea alone is about the size of Portugal or Hungary.

The largest island, Jeju-do, lies off the southwest corner of the peninsula and has a land area of 1,825 km^2. Other important islands include Ulleung and Dok Islands in the East Sea and Ganghwa Island at the mouth of the Han River. Although the eastern coastline of South Korea is generally unindented, the southern and western coasts are jagged and irregular. The difference is caused by the fact that the eastern coast is gradually rising, while the southern and western coasts are subsiding (Fig. 1).

The Republic of Korea's landmass is approximately 100,032 km^2, approximately 290 km^2 of which is occupied by inland water. The five largest rivers, the Han, Geum, Nakdong, Yeongsan and Seomjin Rivers, generally

follow a gradual descent from the northeast to the southwest. The Nakdong River, the longest river in the Republic of Korea, flows southward from the foothills near the Mt. Taebaek for 521 km. The Han River flows westward from the foothills of the Mt. Taebaek Divide for nearly 514 km. The Geum (401 km) and Yeongsan (115 km) Rivers flow westward, while the Seomjin River (212 km) flows southward. There are not large rivers flowing into East Sea (http://koreanhistoryproject.org/Jta/Kr/KrGEO0.htm).

About 30% of the area of Republic of Korea consists of lowland, and the greater majority of lowland area lies along the coasts, particularly the west coast and neighboring the 4 major rivers. Economically, the most important lowlands are the Han River plains around the vicinity of Seoul, the Pyeongtaek coastal plains to the southwest of Seoul, the Geum River basin, the Nakdong River basin the Yeongsan River and the Honam plains in the southwest. A narrow littoral plain extends along the east coast.

Nearly 70% of the Republic of Korea is characterized by hills and rugged mountains, including three major mountain ranges within the Republic of Korea, the Mt. Taebaek, Mt. Sobaek and Jiri Massif. In addition, a number of smaller mountain ranges, originating in Taebaek range, run parallel to each other in a generally northeast-to-southwest direction. The highest mountain peak in the Republic of Korea is Mt. Halla, a 1,950 m extinct volcano located on Jeju-do. Mt. Jiri (1,915 m), located in the Jiri Massif, is the highest summit in the mainland. The mean elevation of the Republic of Korea is 433 m and the mean slope angle is 10.4°. A profile of the Republic of Korea reveals that the eastern side of the Taebaek Mountain ranges has high relief, while the western flank has widely spaced hills with low relief. The Taebaek Mountain range rises to over

1,500 m on the eastern side of the peninsula and then drops abruptly toward the East Sea, with little or no coastal plain.

About 75 wetland areas in the Republic of Korea are registered as ecologically protected significant. Abundant tidal flats have developed along the coastline of the Yellow Sea, and many inland wetlands have formed through a combination of sediment accumulation and terrestrial subsistence. The inland wetlands may be sub-divided as river and mountain wetlands. Typical river wetlands can be found along the Nakdong River. Unlike many other rivers in Korea, the Nakdong River has a relatively gentle channel upstream, which provided ideal conditions for the formation of river wetlands. Flood-plain type wetlands (e.g. Upo Wetland) are especially well developed along the Nakdong River drainage basin. In addition, there are many mountain wetlands which have formed on gentle slopes at the top of mountains. Nineteen wetlands of the Republic of Korea are recognized as internationally important wetlands by the RAMSAR Convention on Wetlands as of 2014; Odaesan National Park Wetlands and The High Moor, Yongneup of Mt. Daeam in Gwangwon-do, Du-ung Wetland, Seocheon Tidal Flat and Suncheon Bay in Chungcheongnam-do, Upo Wetland in Gyeongsanam-do, Gochang and Buan Tidal Flats and Ungok Wetland in Jeollabuk-do, Jangdo Island High Moor, Jeungdo Tidal Flat and Muan Tidal Flat in Jeollanam-do, 1,100 Altitude Wetland, Dongbaekdongsan and Muljangori-oreum Wetland in Jeju-do, Ganghwa Maehwamarum Habitat and Songdo Tidal Flat in Incheon, Han River-Bamseom Islets in Seoul, and Moojechineup in Ulsan (http://www.ramsar.org/cda/en/ramsar-pubs-notes-annotated-ramsar-16083/main/ramsar/1-30-168%5E16083_4000_0__).

2. Climate

The most important climatic feature on the Korean Peninsula is the Asian Monsoon system, which is induced by the heat contrast between the Asian landmass and the Pacific Ocean. The Republic of Korea has a temperate climate, with four distinct seasons of spring, summer, autumn and winter. The contrast between winter and summer is striking. Winter is usually long, dry and bitterly cold and is influenced primarily by Siberian air masses, while summer is relatively short, humid and very hot, owing to the clockwise flow on the western side of the North Pacific high pressure system. Spring and autumn are sunny and generally dry, and while pleasant, they can be short in comparison with the brutal winter. The variation of annual temperatures ranges from 10 ºC to 16 ºC, except for the mountainous areas. August is the hottest month with the mean temperature ranging from 20 ºC to 26 ºC. January is the coldest month with the mean temperature ranging from -5 ºC to 5 ºC. Annual precipitation is about 1,500 mm in the central region. More than a half of the total rainfall amount is concentrated in summer, while precipitation of winter is less than 10% of the total precipitation. The relative humidity is highest in July at 80% to 90% nationwide, and is lowest in January and April at 30% to 50%. It has a moderate value of about 70% in September and October (http://www.labfrontier.com/koica/korea/korea_05.htm).

The rainy season over the Republic of Korea, or the so-called 'Jangma' season, continues for approximately one month, from late June until late July. A short period of rainfall which is associated with the Jangma system also usually comes in early September. This rain occurs over a period of 30-40 days from June and through July over all points of the Republic of Korea, with a relatively

small amount of lag between its at different weather stations, and accounting for more than 50% of annual precipitation at most stations. The southern coastal and its adjacent mountain regions have the largest amount of annual precipitation (over 1,500 mm). However, the amounts of annual precipitation towards the north are generally reduced in comparison with southern and mid-latitude regions. Two or three typhoons usually approach the Korea peninsula between June and September, and serious droughts occur about once every eight years.

The relative diversity of regional climates encountered for a landmass, the size of the Korean peninsula is due to the relatively long distance between the northern and southernmost latitudes, the diverse and mountainous topography, as well as the nature of the surrounding seas. The Democratic People's Republic of Korea lies adjacent to the Eurasian continent, and so, the region is influenced strongly by the Siberian landmass, while the southern region neighbors the sub-tropical pacific. The large extent of mountainous areas also affects local and regional climates, as in addition to the obvious impact of elevation changes on temperature, mountains also affect the spatial distribution of precipitation, with significantly more precipitation on the windward side than on the leeward side.

II

Biodiversity of the Republic of Korea :

1. Biota of the Republic of Korea

Although Korea is joined to the northeast Asia continent, it is isolated ecologically by three barriers, the high mountain terrain of Mt. Baekdu and the Duman River, both in the northeast, along with the Amnok River in the northwest. These function as geographic barriers in limiting the dispersal of wildlife from the surrounding regions of China and Russia into the Korean peninsula. As a result, the Korean Peninsula contains a rich assortment of endemic and native species, and due to the nature of these barriers, a greater proportion of endemic species are found among the freshwater fish, insects and vascular plants than among other major taxa. Since the cessation of full-scale war between North and South Korea in 1953, the DMZ has acted as an ecological barrier, especially for large mammals such as the amur tiger, asiatic black bear and gray wolf, and they are now classified as regionally extinct or endangered species in the Republic of Korea. The absence of mankind within the DMZ has also resulted in the propagation of a wide variety of small mammal and bird species.

The biota of the Republic of Korea was studied mainly by Western and Japanese academia from 1830 to the 1880s and there was an established synopsis of most taxa prior to 1945 (Ministry of Environment, 2011). However, over the course of the Korean War (1950 - 1953), many of the academic texts and specimens were destroyed. From the 1960s, re-examinations of the biota of the Republic of Korea have been re-launched and are continuing to this date. The biota of the Republic of Korea, in 2012, consists of about 39,000 species, including fauna, flora, mircoorganism and others (Table 1). Since the launch of 2 large projects at the start of the 21th century, the number of catalogued species

has steadily increased. For example, the number of invertebrates (excluding insects), fungi and protists has been a two-fold increase. The two initiatives are the “Flora and Fauna of Korea Series Publication Project”, and the other is “The Survey of Indigenous Species of Korea”, which aim to discover unreported species within Korea. These projects amount to a comprehensive re-examination of Korean biota, held under the auspices of National Institute of Biological Resources (NIBR), and sponsored by the Ministry of Environment. However, the total biota of the Republic of Korea is estimated to be about 80,000 species, indicating that the majority of species in Korea remains to be described or discovered.

The number of native species in Korea is estimated to be approximately 100,000 and recent research shows a high degree of endemism in the Korean biota. A total of 41,483 species were known including 2,177 endemic species. Among them, 15,651 species are insects and 527 species are vascular plants, however, the endemic ratio is much greater, at 9.9%, for vascular plants. There are several reasons for the explanation of higher endemism in vascular plants compared with that of other taxa. The Korean Peninsula extends southward from Northeast Asia to Japan, and this geographical characteristic enables Korea to accommodate a wide diversity of plant life. Also, there is great diversity in the mean annual temperature (of 16 ^{o}C at Jeju-do in the Republic of Korea to 5 ^{o}C at Gaemagowon in the Democratic People’s Republic of Korea) and the mean annual precipitation ranges from 100 mm at the southern coast to 400 mm in northern inland of Korea. Therefore, various climatic conditions, from warm temperate zones to boreal climatic zones, exist within the country/peninsula, and such conditions provide for a wide diversity of habitats for plant species.

A further contributing factor to the large degree of endemic species in the

Korean peninsula is the mountain range, running from north to south, and connected to other mountain chains of the east coast. The resulting variation in altitude combined with the afore mentioned latitudinal factor is the primary contributing factor to the diversity of endemic wildlife occurring in mainland regions of Korea. There are also about 3,580 islands providing a diverse geographical environment for flora and marine species, as well as a complex geological substrate along much of this coastline. There is little volcanic or glacial activity on the peninsula, but the presence of volcanic soils as well as glaciers within the peninsula further adds to habitat diversity. This factor, along with other conditions, such as the complex lithological and soil systems, has secured the survival of much Tertiary flora. Hence, the Korean Peninsula, which has served as a migration route and refugia during glacial and interglacial periods, has guaranteed the survival of both northern and southern flora.

Table 1. Number of species according to major taxa from 2002 to 2013 in the Republic Korea

Taxon	Number of species		Endemic species	
	2002	2013	Number of species	Percentage
Vertebrate	1,359	1,889	76	4.00
Insects	11,853	15,651	1,097	7.01
Invertebrates*	3,451	6,961	451	6.48
Vascular plants	4,662	5,308	527	9.93
Fungi/Lichen	1,625	4,153	2	0.05
Protists	736	1,573	0	0.00
Algae	3,557	4,879	24	0.49
Prokaryote	1,219	1,059	0	0.00
Total	28,462	41,483	2,177	5.25

http://www.index.go.kr/egams/stts/jsp/potal/stts/PO_STTS_IdxMain.jsp?idx_cd=1462&bbs=INDX_001
* excluded the insect

2. Fauna of the Republic of Korea

1) Mammals

There are 124 mammal species in the Republic of Korea, and these were surveyed in earnest by Korean scholars from the 1980s. Mammals in the Republic of Korea are largely concentrated in the temperate zone, with some are distributed in the subarctic and subtropical zones. By origin, they are largely categorized into those originating from the northern lineages (palearctic region) and those originating from the southern lineages (oriental region). By geographical distribution, mammal fauna in the Republic of Korea is mostly comprised of regional endemic species of northeastern Asia, with a few multinational species of Europe and Southeast Asia. The endemic mammals in the Republic of Korea include the Korean hare (*Lepus coreana*) under Lagomropha, and *Apodemus agrarius chejuensis* under Rodentia. Korean hares inhabit the entirety of the Korean Peninsula, while two species of bats inhabit the Republic of Korea only. *Apodemus agrarius* inhabits Jeju-do only (Ministry of Environment, 2013).

2) Birds

Birds registered in the Republic of Korea include 522 species. From a zoogeographical perspective, the birds in the Republic of Korea belong to the Chinese sub-region, which includes diverse inhabitation environments ranging from lowland plains to highland areas. Typical birds of the Chinese sub-region include the pheasant (*Phasianus colchicus*), black paradise flycatcher (*Terpsiphone atrocaudata*), and brown-eared bulbul (*Microscelis amaurotis*).

Resident birds of the Republic of Korea are multinational species of China , Russia, and Japan, and there are virtually no indigenous bird species. However, the white-bellied woodkeeper (*Dryocopus javensis richardsi*) can be regarded as an endemic subspecies of the Republic of Korea, as its population in Japan has been become completely extinct (Ministry of Environment, 2013).

3) Amphibians and Reptiles

Twenty-one amphibian species and 31 reptile species are known to be distributed in the Republic of Korea. Among reptile species, only the beauty rat snake is known to be an invasive alien species. From a zoogeographical perspective, subarctic and subtropical reptile and amphibian species exist in the Republic of Korea largely in the temperate zone, and they are basically categorized as those originating in the palearctic and oriental region. The origin of amphibians and reptiles in the Republic of Korea date back a long time, and six endemic species of amphibians have been reported in the Republic of Korea; Suweon tree frog (*Hyla suweonensis*), Korean brown frog (*Rana koreana*), Korean golden frog (*Pelophylax chosenicus*), Jeju salamander (*Hynobius quelpaertensis*), Gori salamander (*Hyonobius yangi*), and the Korean crevice salamander (*Karsenia koreana*). However, there are no confirmed endemic species among the reptiles, though *Plestiodon coreensis* has a high possibility of being an endemic species (Ministry of Environment, 2013).

4) Fish

According to “Compilation of the National List of Indigenous Species on the Korean Peninsula” published by National Institute of Biological Resources, 215

freshwater fish inhabit the Korean peninsula, and among them, 67 species are endemic. In addition, about 650 saltwater fish are found in the general vicinity of the Korean Peninsula. The Korean Peninsula has been divided into 3 districts based on the impact of ancient water systems; the West Korea district, the South Korea district and East-North district. The West Korean district include those water systems from the Amnok River to the Incheon River in Gochang, in which 17 endemic species inhabit, including the common Korean bitterling (*Acheilognathus signifer*) and sandy Korean loach (*Iksookimia pumila*). The South Korea district falls under the southeastern part of the Republic of Korea, which includes water systems from the Yeongsan River to the Nakdong River, in which 13 endemic species, including Niwaella multifasciata and *Mirophysogobio koreensis*, are found. The East-Democratic People's of Korea district includes streams flowing to the East Sea north of Gangneung, in which 3 endemics are found (Ministry of Environment, 2013).

5) Invertebrates (including protists)

The invertebrate fauna of the Republic of Korea exhibits in extreme diversity, including about 22,612 species, about 69% of them being insects and 14% other arthropods. However, some major phyla remain to be examined due to a lack of specialist ecologists. There are about 1,554 endemic species in the Korean Peninsula, which from a zoogeographical perspective fall under the palearctic region, and thus, many species also inhabit Japan, China and Far East Russia, where some species are distributed as far as Europe (Ministry of Environment, 2013).

3. Flora of the Republic of Korea

1) Vascular Plants

Some 4,384 vascular plant species are known to exist in Korea, among which 281 are Pteridophyta, 53 Gymnosperm and 4,050 Angiosperm. Among Angiosperm, 2,974 species are Dicotyledoneae and 1,076 are Monocotyledoneae, while two thirds of Anigiosperm are Dicotyledoneae. From a phytogeographical perspective, Korea (including South and North Korea) falls under the East Asian floral region which includes the eastern part of the Himalayas, northeastern part of India, northern part of Myanmar, most of the Chinese continent, and Japan. While Korea shares a considerable number of plant species with China, Russia and Japan, Korean flora are characterized by rich diversity and high ratio of endemic plants, including endemic vascular genera, such as *Megaleranthis*, *Abeliophyllum*, *Hanabusaya* and *Pentactina*, and some 436 endemic species. The largest number of endemic species are distributed in Mt. Halla of Jeju-do, where some of which have been evaluated as endangered species (Ministry of Environment, 2013).

2) Fungi and Lichens

The total number of fungi species recorded in the Korean Peninsula in 2010 was approximately 3,451, and lichen species were at about 702. Although fungi in Korea are extremely similar to those of China and Japan, three species are endemic to Korea, including bracket fungus (*Fomitopsis incarnatus*), milk-white toothed polypore (*Irpex backsungii*) and *Cerrena aurantiopara*. Lichens distributed throughout Korea include species growing in Northeast Asia, and

many species of widely geographically dispersed flora appear on the Korean Peninsula. Nine species of lichens on the Korean Peninsula have been reported as new species, however, there is a possibility that these are also distributed in neighboring countries (Ministry of Environment, 2013).

3) Algae

Some 4,879 species are known to exist in Korea, among which 1,738 Bacillariophyta, 686 Flagellates, 1,275 Chlorophyta, 239 Cyanophyta, 33 Charophyta, 193 Phaeophyceae, 123 Chlorophyta, 592 Rhodophyta were listed. The only algae species designated as endangered is Coccophora langsdorfii, known to grow exclusively in Korea, northern Japan and Russia (National Institute of Biological Resources, 2013).

4. Prokaryotes of the Republic of Korea

Up until 2013, 1,059 bacteria were newly recognized and published in Korea. In 2006, three new species of bacteria were discovered on Dok Island, and were named as "*Dokdoenlla koreensis*", "*Dokdnoia donghaensis*", and "*Donghaeana dokdonensis*" (National Institute of Biological Resources, 2013).

III

The Process of Preparing the 2014 National Red List

1. Background

There have been several previous attempts to compile a red list for the Republic of Korea, either personally or as a group, and with special emphasis on site-specific or taxon-specific concerns, most of which have been focused on vascular plants (Kim et al., 2008; Lee and Choi, 2006; National Arboretum, 2008; Sun et al., 2011). However, apart from vascular plants, there were no attempts made to evaluate the endangerment status of other taxa based on the IUCN red list category and criterion. However, the Ministry of Environment had designated a number of endangered species as protected animals and plants though environmental laws since 1989. In 2012, the government updated this list to 246 species of protected animals and plants.

Although the protected animals and plants were designated based on environmental laws, the evaluations of the endangered status of these species, according to IUCN red list category and criterion, were insufficient, because of inexperience in the application of red list category and criterion and a shortage of data for the evaluations. In the latter part of the 2000's, it was strongly felt that a new list of nationally threatened species of the Republic of Korea should be formulated by the application of objectively and scientifically defined criteria, rather than merely being based on individual perceptions of threat, in order to achieve acceptance of the importance of species conservation among Korean authorities due to the increasing rate of man-made extinctions and development of new threats to species, because the establishment of a full and detailed catalogue of endangered species was lacking.

In response, the National Institute of Biological Resources (NIBR) had

launched two projects. One is to organize a Regional Red List Committee and the other is to publish a regional red list. As a result, NIBR published nine regional red data books in Korean regarding each of birds, amphibians, reptiles and fish in 2011, mammals, vascular plants, mollusks and insects I in 2012, and insects II and III in 2013. The NIBR had set up the regional red list committee in 2011, and Dr. Suh, a professor of Seoul National University, and Dr. Kim, Direct general of the NIBR, were assigned as co-chairman of the committee, and 40 experts as committee member.

2. Red List assessment

This Red List has been prepared on the basis of the guidelines given by the International Union for Conservation of Nature and Natural Resources (IUCN), using the IUCN Red List Categories and Criteria (version 3.1), and IUCN Red List Categories and Criteria at Regional Levels (version 3.0). Also, Guidelines for using the IUCN Red List Categories and Criteria (version 8.0) were referred to. These included a set of categories relating to the risk that the species will go extinct, and a set of criteria used to determine in which category a species belongs. The Red List Categories and Criteria are summarized in Annex 1 and 2, respectively.

1) Included Species

Among the biota of the Republic of Korea, mammals, birds, amphibians, reptiles, fish, vascular plants, mollusks and some taxa belonging to insects were included. The remaining taxa, such as invertebrates, algae and fungi were not

included, though the Red List of invertebrates is under evaluation in the present.

Only inland indigenous species of biota in the Republic of Korea were evaluated. Alien species introduced by human beings or anthropogenic activity (both active or passive), migratory birds and marine fauna were not assessed. In addition, species that have reproduced more rarely but have regularly died out (vagrant) were not assessed. However, visitor species that occur regularly but do not reproduce in the Republic of Korea were assessed, where their population in the Republic of Korean territory amounts to more than 1 % of the global population. Globally threatened species distributed in, or migrating to the Republic of Korea were extracted from the IUCN red list homepage (http://www.iucnredlist.org/) and evaluated.

Among the vascular plants of about 4,000 species, only a number of selected species were evaluated. The selection was based on previous studies of Korean flora (Kim et al., 2008; Lee and Choi, 2006; National Arboretum, 2008; Sun et al., 2011). Some hydrophytes and hygrophytes were added as they had not been included in the previous studies, but are now seriously threatened by water pollution, or reclamations.

The nomenclature of fauna follows the checklist of Korean species published by NIBR, and those of flora follows the genera of vascular plants of Korea edited by the Flora of Korea Editorial Committee. Some plant names which were excluded in the genera of vascular plants of Korea were determined though reference to the International Plant Names Index (www.ipni.org).

2) Evaluation

The Red List evaluation followed IUCN guidelines however, for most of species there are insufficient detailed information to make exact evaluations against the sets of IUCN criteria. Clear statistical population information relating to the change of natural habitats was notably absent. Therefore, more than 90 % of taxa should be estimated relied on the criteria B, as restricted geographical range. Distribution data from published papers, unpublished technical reports and checklists, as well as museum or herbarium records were collected and estimated. Several editors were ordained for each taxon, and the evaluations were made under the auspices of editors. The contributors who published the initial information about the species and the reviewers who scrutinize the draft lists were listed among The Red List Project Team.

Although IUCN suggests recording the proportion (%) of global population occurring within the region, it is not possible to provide all of the recommended information at present. A brief textual summary with a reasons why a species was red-listed was given in the current draft in accordance with the recommendation of IUCN.

IV

Red List of the Republic of Korea

1. Evaluated Taxonomic Groups

The biota of the Republic of Korea consists of about 41,500 species and among them, 8,150 species of mammals, birds, reptiles and amphibians, fishes, and vascular plants were evaluated (Table 2), of which 1,021 species (8.7%) have been classified as Red List species. Only one species, Japanese sea lion (*Zalophus japonicus*), has been classified as Extinct (EX). This species was also registered as extinct in the IUCN red list. Ten species have been estimated as Regionally extinct (RE) in the Republic of Korea (Table 3), including five mammals; the amur tiger (*Panthera tigris altaica*), gray wolf (*Canis lupus*), Eurasian lynx (*Lynx lynx*), amur leopard (*Panthera pardus orientalis*), Sika deer (*Cervus nippon*); three birds, Japanese crested ibis (*Nipponia nippon*), Crested Shelduck (*Tadorna cristata*), Tristram's woodpecker (*Dryococpus javensia richardsi*); one fish, the long snouted bullhead (*Leiocassis longirostris*); and one insect, one species of dung beetles (*Gymnopleurus mopsus*).

Table 2. Number of species evaluated and listed in the Red List

Taxon	Number of species	
	Evaluated	Listed in Red List
Mammals	105	41 (39.0%)
Birds	536	95 (17.7%)
Amphibians and Reptiles	43	43 (100.0%)
Fish*	213	76 (35.7%)
Insects**	4,553	143 (3.1%)
Mollusks	1,963	80 (4.1%)
Vascular Plants	737	543 (73.7%)
Total	8,150	1,021 (12.5%)

* excluded the saltwater fish
** some taxa belonging to Ephemeroptera, Odonata, Blattaria, Plecoptera, Dermaptera, Neuroptera, Coleoptera, Mecoptera, Trichoptera and Lepidoptera

Table 3. The endangered status of animals and plants species evaluated in the Red List

Taxon	Number of species											Total
	EX	EW	RE	CR	EN	VU	NT	LC	DD	NE	NA	
Mammals	1		5	1	4	9	1	11	4	4	1	41
Birds			3	1	18	36	8	28			1	95
Amphibians and Reptiles					5	5	2	23	4	3	1	43
Fish*			1	4	13	9	14	20	5	10		76
Insects**			1	12	22	74	34	511	380	3491	28	4,563
Mollusks				4	19	57	82	583	923	264	31	1,963
Vascular Plants				28	86	110	56	97	40	126		543
Total	1	0	10	50	167	300	197	1,273	1,356	3,898	62	7,314

* excluded the saltwater fish
** some taxa belonging to Ephemeroptera, Odonata, Blattaria, Plecoptera, Dermaptera, Neuroptera, Coleoptera, Mecoptera, Trichoptera and Lepidoptera

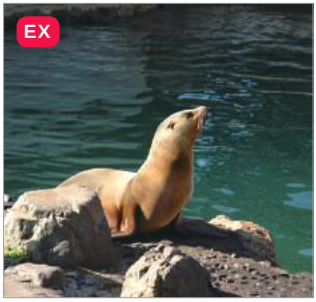
According to IUCN guidelines, the species classified as Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) were considered as threatened species, and the total number of threatened species in the Republic of Korea was 517 (about 7.1% of all the evaluated species). Of them, 113 species were endemic species to the Republic of Korea; 4 amphibians, 15 fish, 40 vascular plants, 46 mollusks and 8 insects. The total number of unthreatened species classified as Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluate (NE) and Not Applicable (NA) was 6,786.

2. Species Summary

Species, classified as Extinct (EX), Regional Extinct (RE), Critically Endangered (CR), Endangered (EN) and Vulnerable (VU), are summarized along with their photos and a reason why a species is red-listed. In addition, species are listed according to the taxonomic hierarchy in Annex 3, along with the accompanying information required by IUCN; scientific name, regional red list category (using the English abbreviated forms), and criteria.

2.1

Endangered Mammals in the Republic of Korea



Zalophus japonicus Peters, 1866

Pinnipedia: Otariidae

Zalophus japonicus is a sea lion that was previously known from Ulleung and Dok Islands of Gyeongsangbuk-do. About 100 individuals were observed from 1953 to 1956. There is no observed data available for this species since the 1970s and the species might be extinct. This species was formerly found along the coast. The species is assessed as EX. Indiscriminate collection was a main threat, but fishing, weakened breeding and restoration capacity of the surviving population, and changes of the marine environment in recent years may be threatening this species. There are currently no regional conservation measures.

Canis lupus (Linnaeus, 1758)

Carnivora: Canidae

Canis lupus is a wolf that was previously known from central and northern areas including the Pyeongsan area in Hwanghae-do and Gyeongsangbuk-do. There is no observed data available for this species since the 1960s and the species might be regionally extinct. This species is mainly found in mountainous regions with few trees. The species is assessed as RE. No major widespread threats have been reported to this species. There are currently no regional conservation measures.

Lynx lynx (Linnaeus, 1758)

Carnivora: Felidae

Lynx lynx is a medium-sized cat endangered internationally that was previously known from Gangwon-do and Gyeongsangbuk-do. There is no observed data available for this species in recent years and the species might be regionally extinct. The species is assessed as RE. This species is mainly found in high mountainous forests. Illegal hunting for fur may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Panthera pardus (Linnaeus, 1758)

Carnivora: Felidae

Panthera pardus is the smallest leopard in the genus *Panthera* that was previously known throughout Korea including the Gwangneung area in Gyeonggi-do. There is no observed data available for this species in recent years and the species might be regionally extinct. This species is found in grasslands, woodlands, and riverine forests. The species is assessed as RE. Illegal hunting for fur, destruction and fragmentation of natural habitats by forest trails and road construction may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Panthera tigris Linnaeus, 1758

Carnivora: Felidae

Panthera tigris is the largest cat that was previously known only at Mt. Daedeok in Gyeongsangbuk-do. Only a single individual was captured in 1921, and there is no observed data available for this species. This species was found mainly in forests and might be regionally extinct. The species is assessed as RE. Illegal hunting for fur may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Moschus moschiferus (Linnaeus, 1758)

Artiodactyla: Moschidae

Moschus moschiferus is a musk deer protected internationally that was previously known throughout Korea. This species has been observed at several areas in Gangwon-do and Gyeongsangbuk-do, and at Mt. Jiri in Jeollanam-do in recent years. The estimated number of individuals is fewer than 50. This species is found on steep slopes with coniferous forests in rocky valleys, around streams, and near fields with rich grasses. The species is assessed as CR C2a(i); D1. Loss of natural habitat (excluding the mountainous regions in Gangwon-do) caused by development and fragmentation, and illegal hunting for medicinal use may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Cervus nippon (Temminick, 1838)

Artiodactyla: Cervidae

Cervus nippon is a deer that was previously known throughout Korea including Jeju-do. There is no observed data available for this species since the 1940s and the species might be regionally extinct due to illegal hunting for medicinal use. This species is mainly found in forests of warmer regions. The species is assessed as RE. Illegal hunting may be threatening this species. There are currently no regional conservation measures.

Vulpes vulpes (Linnaeus, 1758)

Carnivora: Canidae

Vulpes vulpes is the world's largest fox that was previously known throughout Korea except Ulleung Island of Gyeongsangbuk-do and Jeju-do. This species was once considered regionally extinct as a results of rodenticides. The find of a carcass at the Yanggu area in Gangwon-do in 2004, raised hopes for survivability of this species in Korea. This species is found in mountainous forests, grasslands, between rocks and at ground dens neighboring houses. The species is assessed as EN A2(a,d); B2ab(iv); D1. Destruction of natural habitat and the lack of connection between mountainous forests may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Ursus thibetanus (G. Cuveir, 1823)

Carnivora: Ursidae

Ursus thibetanus is a medium-sized bear endangered internationally that is known from Mt. Seorak and northern mountains in Gangwon-do, DMZ, and Mt. Jiri in Jeollanam-do. The estimated number of individuals is fewer than 50. This species is found in rocky mountainous forests and forests with rich prey sources. The species is assessed as EN C2(ai); D1. Loss of natural habitat and illegal hunting for medicinal use may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Murina ussuriensis (Ognev, 1913)

Chiropter: Vespertilionidae

Murina ussuriensis is a bat known from Gangwon-do, Gyeonggi-do, and several areas in Gyeongsangbuk-do. To date there is no population data available for this species in Korea. This species is found in tree barks and holes in mountainsides. The species is assessed as EN B2ab(iii). Reduction of natural habitat caused by woodland cultivation and logging may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Phoca largha Pallas, 1811

Pinnipedia: Phocidae

Phoca largha is a spotted seal that is known throughout Korea including the Garorim Bay of Cheongchungnam-do and Baengnyeong Island of Incheon. The observed number of species shows a dramatic decline; 8,000 in 1940, 2,300 in 1980s, and 600~800 in 2010. This species is found in open sea and on nearby coasts. The species is assessed as EN A2ad. Environmental pollution, illegal hunting, development for tourism, and shortage of prey caused by excessive fishing may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Naemorhedus caudatus (Miline-Edwards, 1867)

Artiodactyla: Bovidae

Naemorhedus caudatus is a goral that is known throughout Korea except Jeju-do, especially in mountains around Mt. Taebaek in Gangwon-do. The observed number of species increased from 40 individuals in 1982 to 800 individuals in 2002. This species is found on steep rocks and in steep mountainous forests. The species is assessed as VU C2a(i); D1. Disconnection of natural habitats and indiscriminate hunting may be threatening this species. Though there are currently no regional conservation measures, the species is under restoration.

Prionailurus bengalensis (Kerr, 1792)

Carnivora: Felidae

Prionailurus bengalensis is a small wild cat that was known throughout Korea except Jeju-do. The species was fairly abundant until 1950 and was once considered regionally extinct, and about 100 individuals were killed on roads over the past two years. This species is found mainly in mountainous forests, valleys, coasts, and shrubberies. The species is assessed as VU A2cd. Illegal hunting, destruction of natural habitats, and road-kills may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Lutra lutra Linnaeus, 1758

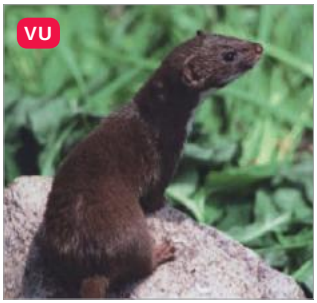
Carnivora: Mustelidae

Lutra lutra is an otter protected internationally that is known from Gangneung and Yangyang areas in Gangwon-do, Geoje Island of Gyeongsangnam-do, the Jinan area in Jeollabuk-do, Mt. Jiri in Jeollanam-do, Seomjin River, and Boseong River. The estimated population size is small. This species is found around rivers and lakes. The species is assessed as VU A2c. Destruction of natural habitats caused by construction of artificial structures, water pollution, and illegal hunting for fur may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Martes flavigula (Boddaert, 1785)

Carnivora: Mustelidae

Martes flavigula is a marten known throughout inland of Korea including the Gwangneung area in Gyeonggi-do. To date there is no population data available for this species in Korea. This species is uncommonly found in mountainous regions. The species is assessed as VU A2cd; B2ab(iii,iv). Destruction of natural habitats caused by the construction of forest trails and roads, and renewal of tree species may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.



Mustela nivalis (Linnaeus, 1766)

Carnivora: Mustelidae

Mustela nivalis is the world's smallest weasel and is known throughout inland of Korea except Ulleung Island and Jeju-do. There are estimated to be fewer than 10 populations. This species is mainly found in high mountains, but sometimes around houses. The species is assessed as VU A2cd; B2ab(iii,iv). Destruction of natural habitats and illegal hunting may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Myotis formosus (Hodgson, 1835)

Chiroptera: Vespertilionidae

Myotis formosus is a bat known from throughout Korea including Jeju-do, especially in Cheongchungbuk-do, Cheongchungnam-do, the north of Gyeongsangbuk-do, and Jeollanam-do. The estimated total number of individuals is fewer than 1,000. This species is found in natural caves and abandoned mines. The species is assessed as VU A2cd; D1. Reduction of natural habitats by destruction of mountainous forests, forest trail construction, and closing of the entrances of natural caves and abandoned mines may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Plecotus auritus (Linnaeus, 1758)

Chiroptera: Vespertilionidae

Plecotus auritus is a bat known from Gangwon-do and the north of Gyeongsangbuk-do. The estimated number of individuals is fewer than 100. This species is found in natural caves and abandoned mines. The species is assessed as VU A2cd; D1d. Damage of natural habitats by forest trails and road construction, and thinning may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Callorhinus ursinus (Linnaeus, 1758)

Pinnipedia: Otariidae

Callorhinus ursinus is a seal known from the south and west coasts. About 60 individuals were caught and killed in nets along the coast of the Goseong area, Gangwon-do, in 2002 and about 12 individuals were observed in waters off Gangneung area of Gangwon-do in 2011. This species is found on rocky coasts. The species is assessed as VU A2d; B2ab(iv). Competition for prey with fishing by humans, climate change, attack of killer whales, and incidental catches may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Pteromys volans (Linnaeus, 1758)

Rodentia: Sciuridae

Pteromys volans is a flying squirrel known throughout Korea except island areas including Ulleung Island and Jeju-do and was once considered regionally extinct. Though there is no data available for this species, population has been restored in recent years. This species is found in mountainous forests and mature plantations in mountainous regions. The species is assessed as VU A2c. Environment change and damage of natural habitats caused by logging and dam construction, reduction of natural habitats caused by various developments and pesticides, and road-kills may be threatening species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

2.2

Endangered Birds in the Republic of Korea

Tadorna cristata Kuroda, 1917

Anseriformes: Anatidae

Tadorna cristata is a migratory bird found in winter in Primorye, Russia, Hokkaido of Japan, and South Korea. Only 3 specimens are known throughout the world. There is no observational data available for the species since only a single individual was collected at the Nakdong River near Busan in 1916. This species was found in river estuaries and might be regionally extinct. The species is assessed as RE. There are currently no regional conservation measures.

Nipponia nippon Temminck, 1849

Ciconiiformes: Threskiornithidae

Nipponia nippon is an endangered species internationally that was previously known from the DMZ area, Seoul, Daejeon, and Palmi Island of Incheon until the late 19th century. Though only a single individual was observed in 1974 and 1979, the species might be regionally extinct. Artificial increase have been attempted at the Upo Wetland in Gyeongsangnam-do since 2008. This species was previously observed in pine forests with small trees and bamboos, rice fields, and swamps. The species is assessed as RE. Reduction of feeding habitats, illegal hunting, and rice fields with poor irrigation facilities in mountainous areas may be threatening this species. The species is regionally protected as Natural Heritage by the law.

Dryocopus javensis richardsi Tristan, 1879

Piciformes: Picidae

Dryocopus javensis richardsi is a rare bird that was previously known from Gyeonggi-do, Chungcheongnam-do, Jeollabuk-do, and Busan. The extent of occurrence (EOO) of the species is critically limited. Since 1989, there are no observational data available for the species, although breeding of the species was recorded in Gwangneung, Gyeonggi-do in 1981. The species might be This species is observed in coppices with coniferous broadleaf trees. The species is assessed as RE. regionally extinct. Habitat loss by deforestation and illegal hunting may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Eurynorhynchus pygmeus Linnaeus, 1758

Charadriiformes: Scolopacidae

Eurynorhynchus pygmeus is a small shorebird of very few individuals (about 20) that migrates widely along the west and south coasts in spring and autumn. The estimated population size is small and declining. The observed number of the species showed a dramatic decline; 2,000 to 2,800 pairs in the 1970s, fewer than 1,000 pairs in 2000, 402 to 572 pairs in 2003, 350 to 380 pairs in 2005, and 150 to 320 pairs in 2008. This species is observed at sandy tidelands in reclaimed lands, saltwater ponds, swamps, and the mouths of rivers along the coast. The species is assessed as CR D(1). Habitat loss by wetland reclamation, illegal hunting, and climate change may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Anser cygnoides Linnaeus, 1758

Anseriformes: Anatidae

Anser cygnoides is a rare large goose protected internationally that was previously known from the coast of Jeollanam-do and Cheonsu Bay of Chungcheongnam-do. The estimated number that migrate to Korea is about 500 individuals and one-fifth of them overwinter at the estuary of the Han River and Imjin River basin in recent years. The species is mainly observed in large wetlands. The species is assessed as EN A1c. Decrease of aquatic plants and prey of the species by dam construction, tideland development, and the dredging of lakes and reservoirs may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Aythya baeri Radde, 1863

Anseriformes: Anatidae

Aythya baeri is a winter visitor of 1-4 individuals that migrates to lakes and river estuaries. Annual observed number of individuals is variable and unstable. This species is observed around dams and coastal reclaimed lakes. The species is assessed as EN D(1). Reduction of overwintering and breeding habitats caused by various developments and illegal hunting may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Cygnus olor Gmelin, 1789

Anseriformes: Anatidae

Cygnus olor is a winter visitor that migrates sporadically throughout Korea. The species is mainly found at Songji, Gyeongpo, and Cheongcho Lakes in Gangwon-do and Hwajinpo Lake in Gangwon-do which is the largest overwintering area for the species in Korea. Since the early 1990s, the species has not been found at Cheongcho and Songji Lakes. In the middle of the 1990s, a small population was found at the Cheonsu Bay and Daeho Reservoir in Chungcheongnam-do, Goseong area in Gyeongsangnam-do, and Hyeongsan River. The observed number of the species declined from 145 in 1980 to only about 10 in recent years. This species is observed around rivers, coastal lakes, and reservoirs. The species is assessed as EN A1c. Road construction near lakes, developments for tour, and frequent freezing of lakes may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Mergus squamatus Gould, 1864

Anseriformes: Anatidae

Mergus squamatus is a winter visitor protected internationally of which only about 20 individuals migrate to the Gangneung area in Gangwon-do, Gyeongsangbuk-do, Sancheong area in Gyeongsangnam-do, Jeju-do and Seoul. A maximum of 51 individuals was observed in 2006. This species is observed around rivers, reservoirs, lakes, and inland coasts. The species is assessed as EN A1c. River refurbishment may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Synthliboramphus wumizusume Temminck, 1835

Charadriiformes: Alcidae

Synthliboramphus wumizusume is a resident bird protected internationally of which only a few individuals are known from the south coast. Breeding was observed in Gugul Island of Jeollanam-do and Dok Island of Gyeongsangbuk-do in 1987 and 2008, respectively. The observed number of the species declined from about 200 individuals in 1987 to only about 10 in 2004 and 2008. The largest observed number of individuals was 200 in 1987. This species is observed on the sea and around islands. The species is assessed as EN A1a. Shortage of prey and predation by carnivores in their breeding habitats may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Larus relictus Lönberg, 1931

Charadriiformes: Laridae

Larus relictus is a winter visitor protected internationally that migrates to coastal areas throughout Korea except Jeju-do during the non-breeding period. This species is observed at estuaries of rivers, coasts, and reclaimed lakes. The species is assessed as EN D(1). Damage to natural habitats caused by tideland reclamation and coastal pollution may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Larus saundersi Swinhoe, 1871

Charadriiformes: Laridae

Larus saundersi is a gull that is known throughout Korea. About 1,200-2,000 individuals overwinter every year and breed in some areas of the west coast. This species is observed at tidelands along the coast and at river estuaries. The species is assessed as EN A1ac. Apart from the failure to breed caused by human disturbance of breeding sites, vehicle noise, airplanes, and reduction of natural habitats by development and reclamation may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Tringa guttifer Nordmann, 1835

Charadriiformes: Scolopacidae

Tringa guttifer is a transitory visitor in which only a few individuals migrate to the west and south coasts without breeding in Korea. This species is observed in reclaimed lands, grassy wetlands, and at river estuaries. The species is assessed as EN A1c. Reduction of natural habitats caused by tideland reclamation and coast development, and illegal hunting may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Egretta eulophotes Swinhoe, 1860

Ciconiiformes: Ardeidae

Egretta eulophotes is a summer visitor protected internationally of about 500 individuals that migrates widely to the southwest coast. Breeding of the species was recorded at Shin Island of Incheon in 1987. The colony of Shin Island rapidly declined in the early 1990s and Shin Island is no longer a breeding site. The species is known to breed in recent years in Napdaegi Island of Gyeongsangbuk-do, Chilsan Island of Jeollanam-do, Ye Island of Jeju-do, and Seoman Island and Seomeopbeol of Incheon. This species is observed mainly along the west coast and feeds in tidelands, salt ponds, arable land and reservoirs. The species is assessed as EN A1ac. Apart from spatial limitation and interspecific competition, frequent movement of breeding habitats caused by human disturbance of breeding sites, and tideland reclamation may be threatening this species to the species. The species is regionally protected as Endangered Wildlife by the law.

Gorsachius goisagi Temminck, 1835

Ciconiiformes: Ardeidae

Gorsachius goisagi is a transititory visitor that migrates irregularly to the south coast in spring and summer. Breeding was observed in Jeju-do and Busan in 2009 and the species was observed 1 or 2 individuals at a time. This species is observed at shady ponds and mountainous streams in *Cryptomeria japonica* forests and coniferous forests. The species is assessed as EN D(1). Reduction of breeding and natural habitats caused by forest development and illegal hunting may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Ciconia nigra Linnaeus, 1758

Ciconiiformes: Ciconiidae

Ciconia nigra is a winter visitor of which only a few individuals migrate locally to the Yeongju area in Gyeongsangbuk-do, Hampyeong and Haenam areas in Jeollanam-do, the Nakdong River estuary. Overwintering populations have been observed at several locations in Hampyeong and Nakdong Rivers. This species is observed at river estuaries, grassy wetlands, arable lands, and reservoirs. The species is assessed as EN D(1). Reduction of natural habitats caused by destruction of grassy wetlands and river development, decrease of prey such as fishes, amphibians and reptiles by exposure to pesticides, and pollutants may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Ciconia boyciana Swinhoe, 1873

Ciconiiformes: Ciconiidae

Ciconia boyciana, once a common resident bird in Korea, is a rare winter visitor internationally of which only a few individuals migrate to the Jumunjin area in Gangwon-do, Cheonsu Bay in Chungcheongnam-do, Sacheon area and Upo Wetland in Gyeongsangnam-do, Haenam area and Suncheon Bay in Jeollanam-do, Jeju-do, Daegu, Ulsan and the Nakdong River estuary. This species is observed in grasslands or wetlands. The species is assessed as EN A1c. Reduction of natural habitats by development and shortage of prey may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Aquila chrysaetos Linnaeus, 1758

Falconiformes: Accipitridae

Aquila chrysaetos is a winter visitor and resident bird that migrates throughout Korea. The estimated overwintering population size is very small and 7 individuals were observed in 2010. This species is observed at rivers, plains, and coasts in winter and breeds in rocky mountains. The species is assessed as EN D(1). Reduction of natural habitats, exposure to poisons and pesticides, and illegal hunting for medicinal use or trade may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Haliaeetus pelagicus Pallas, 1811

Falconiformes: Accipitridae

Haliaeetus pelagicus is a winter visitor endangered internationally that migrates irregularly throughout Korea during the winter. This species is observed at coasts and river estuaries, reservoirs and lagoons. The species is assessed as EN A1c. Destruction of natural habitats caused by forest development may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Grus japonensis Müler, 1776

Gruiformes: Gruidae

Grus japonensis is a winter visitor that migrates to the DMZ area and CCL in Gangwon-do, Gyeonggi-do, and Incheon. The observed number of the species gradually increased from 382 individuals in 1999 to 1,051 in 2010. The extent of occurrence (EOO) of the species is limited. This species is observed at sands and tidelands along river estuaries and coasts, grassy wetlands, and arable lands. The species is assessed as EN B1b(i). Reduction of overwintering and breeding habitats caused by reclamation of the tidelands, construction of costal roads and piers, exposure to pesticides, collision with elevated wires, and illegal hunting may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Grus vipio Pallas, 1811

Gruiformes: Gruidae

Grus vipio is a winter visitor endangered internationally of about 1,400 individuals that migrates to the Cheorwon area in Gangwon-do, Imjin River basin in Gyeonggi-do, Haepyeong Swamp in Gyeongsangbuk-do, Junam Reservoir in Gyeongsangnam-do, and Han River estuary. This species is observed at river estuaries, tidelands, open terrains, rice fields, and grassy wetlands. The species is assessed as EN B1b(i). Apart from reduction and fragmentation of natural habitats caused by loss of arable lands, wetlands, and tidelands, pavement of roads and waterways, and shortage of prey may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Otis tarda Linnaeus, 1758

Gruiformes: Otididae

Otis tarda is a winter visitor and endangered species regionally that was previously known from Gangwon-do and Gyeonggi-do. There is no observational data available for the species since only an observation was made at the Cheorwon area in Gangwon-do. The extent of occurrence (EOO) of the species is highly limited. This species is observed mainly in open arable lands and plains. The species is assessed as EN D(1). Reduction of natural habitats by development of arable land, exposure to pesticides, illegal hunting, and overgrazing may be threatening this species. The species is regionally protected as Natural Heritage by the law.

Strix uralensis Pallas, 1771

Strigiformes: strigidae

Strix uralensis is a rare resident bird and only a few individuals are known from the mountainous region in Gangwon-do and Gongju area in Chungcheongnam-do. This species is observed mainly in coniferous forests, sometimes in coppices or deciduous broadleaf forests. The species is assessed as EN D(1). Reduction and fragmentation of natural habitats by development of the mountainous forest may be a main threat this species. The species is regionally protected as Endangered Wildlife by the law.

Anser erythropus Linnaeus 1758

Anseriformes: Anatidae

Anser erythropus is a rare winter visitor that migrates to the Han River in Gyeonggi-do, Cheonsu Bay of Chungcheongnam-do, and Junam Reservoir in Gyeongsangnam-do. Overwintering in flocks was observed at several locations around the Nakdong River, Cheonsu Bay, and Han River until 1992. The annual observed number of individuals is variable and unstable. This species is observed in large arable lands, lakes and along the coast. The species is assessed as VU D(1). Damage of overwintering habitats caused by loss of arable land, lake reclamation, and pollutants may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Branta bernicla Linnaeus, 1758

Anseriformes: Anatidae

Branta bernicla is a winter visitor that about 1,000 individuals mainly migrated to the south coast in the past. The estimated population size has been reduced in recent years. This species is observed on the sea, at costal bays, shallow coasts, in rivers, benthic zones, and reclaimed lands. The species is assessed as VU C2a(i). Shortage of prey caused by coastal pollution and reclamation may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Cygnus columbianus Ord, 1815

Anseriformes: Anatidae

Cygnus columbianus is a winter visitor that migrates to the east and south coasts including the Han River estuary. Past estimated migratory numbers to Korea were 500-1,000 individuals, but it is declining in recent years. Overwintering populations are observed at several locations along the east coast, Junam Lake in Gyeongsangnam-do, Cheonsu Bay of Chungcheongnam-do, and Nakdong River. The extent of occurrence (EOO) of the species is limited. This species is observed in reclaimed lands, lakes, and swamps. The species is assessed as VU A1ac. Damage of natural habitats and shortage of prey may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Cygnus cygnus Linnaeus, 1758

Anseriformes: Anatidae

Cygnus cygnus is a winter visitor that overwinters throughout Korea. About 4,800 individuals migrated to Korea in 2009. Overwintering in flocks was observed at the Cheonsu Bay of Chungcheongnam-do, Jin Island of Jeollanam-do, and the Nakdong River. The population increased about 4,000 from 1999 to 2010. This species is observed at lakes and along the coast. The species is assessed as VU B1. Shortage of prey due to fragmentation of natural habitats by dam, banks and roads construction, dredging, and reclamation of tideland and wetlands may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Charadrius placidus Gray and Gray, 1863

Charadriiformes: Charadriidae

Charadrius placidus is a resident bird that is known throughout Korea from the Imjin River in Gyeonggi-do to the Suncheon Bay of Chungcheongnam-do. The extent of occurrence (EOO) of the species is limited with very small population. The annual observed number of individuals is variable and unstable. This species is observed on gravel rivershores, along rivers and mountainous ponds, and beaches along the coast. The species is assessed as VU D(1). Reduction of breeding habitats caused by river development and loss of sandy plains may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Haematopus ostralegus Linnaeus, 1758

Charadriiformes: Haematopodidae

Haematopus ostralegus is a resident bird that migrates in small populations mainly to the west and south coasts. The extent of occurrence (EOO) of the species is limited. This species is observed on rocks near desert islands, around river deltas, and in tidelands. The species is assessed as VU A1c. Damage of natural habitats caused by reclamation, coastal pollution, and human interference may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Numenius madagascariensis Linnaeus, 1766

Charadriiformes: Scolopacidae

Numenius madagascariensis is a transitory visitor that is observed in the west and south coasts of Korea in spring and autumn. Breeding habitats are wetlands, grasslands and plateaus. This species is observed at river estuaries, saltwater ponds, and tidelands along the coast. The species is assessed as VU A1c. Reduction of tidelands by reclamation has reduced the use of this habitat as a stopover site in recent years and this may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Ixobrychus eurhythmus Swinhoe, 1873

Ciconiiformes: Ardeidae

Ixobrychus eurhythmus is a summer visitor that migrates to the Shihwa Lake in Gyeonggi-do, Cheonsu Bay of Chungcheongbuk-do, and Muan and Haenam areas, and Hong Island of Jeollanam-do. This species is observed in reed fields, small puddles, and grassy wetlands. The species is assessed as VU A1c; D(1). Wetland development and human interference may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Platalea leucorodia Linnaeus, 1758

Ciconiiformes: Threskiornithidae

Platalea leucorodia is a winter visitor protected internationally that migrates to southern parts of Korea. The species was previously known from about 20 areas in Cheonsu Bay of Chungcheongnam-do, Junam Reservoir of Gyeongsangnam-do, Haenam reclaimed land, estuaries of the Geum, Mangyeong, and Nakdong Rivers, and Jeju-do. However, in recent years the species has been at only observed about 10 locations in Junam Reservoir of Gyeongsangnam-do, Suncheon Bay of Jeollanam-do, the Nakdong River estuary, and Jeju-do. This species is observed at river estuaries and in wetlands. The species is assessed as VU A1c. Reduction of natural habitats caused by loss of wetlands and tidelands at river estuaries, and shortage of prey due to pollution may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Platalea minor Temminck and Schlegel, 1849

Ciconiiformes: Threskiornithidae

Platalea minor is a summer visitor protected internationally that migrates to the estuaries of the Imjin and Nakdong Rivers, and Seongsanpo area in Jeju-do. The species sometimes overwinters in Jeju-do and about 710 individuals were observed in 2007. This species is observed along coasts, tidelands, and rivers. The species is assessed as VU D(1). Construction of tidal plants, tideland reclamation, pollution, and human interference may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Columba janthina Temminck, 1830

Columbiformes: Columbidae

Columba janthina is a large wood pigeon of which 100-200 individuals are known from Ulleung Island of Gyeongsangbuk-do and southern island areas. This species is observed year round in deciduous forests, on costal cliffs, and grasslands in coastal islands. Damage to mountainous forests has made the population vulnerable to decline. The species is assessed as VU A1ac; D(1). Reduction of natural habitats caused by construction of coastal roads, development for tourism, cultivation of mountainous forests, and shortage of prey may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Pandion haliaetus Linneaus, 1758

Falconiformes: Accipitridae

Pandion haliaetus is a transitory winter bird that migrates frequently to rivers in Gyeongsangnam-do, the estuaries of the Nakdong, Taehwa, and Hyeongsan Rivers in spring and autumn. This species is occasionally observed at the Nakdong River and islands along the northern coast year round. This species is observed along coasts, river estuaries, and wetlands. The species is assessed as VU D(1). Apart from poisoning by heavy metals and pollutants through food chain, and damage and loss of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Accipiter gentilis Linnaeus, 1758

Falconiformes: Accipitridae

Accipiter gentilis is a resident and winter visitor that is rarely known throughout Korea. The species is observed in Gangwon-do and Chungcheongbuk-do in breeding season. Only about 15 individuals have been observed in overwintering season and 40-120 individuals have been observed in migratory season in west island areas. This species is observed in mountainous forests, arable lands, and riversides neighboring hillocks. The species is assessed as VU D(1). Reduction of mountainous forests and arable lands, shortage of prey, and change of coastal environment by development may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Accipiter gularis Temminck and Schlegel, 1844

Falconiformes: Accipitridae

Accipiter gularis is a resident bird with a low frequency of observation that is known throughout Korea except Gangwon-do and the north of Gyeongsangbuk-do. A few individuals of the species have been observed at open terrains along the coast. The species is assessed as VU D(1). Destruction of natural habitats caused by loss of mountainous areas may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Accipiter nisus Linnaeus, 1758

Falconiformes: Accipitridae

Accipiter nisus is a resident and winter visitor that is known throughout Korea. Though about 170 individuals are observed at western island areas and Busan in migratory season, only a few individuals are found in overwintering season. This species is observed in open terrains, arable lands, rivers, and island areas. The species is assessed as VU D(1). Reduction of arable lands and forests by human development, and shortage of prey may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Accipiter soloensis Horsfield, 1821

Falconiformes: Accipitridae

Accipiter soloensis is a summer visitor that migrates frequently throughout Korea. The species breeds in Korea and is observed throughout most of Korea in May. This species is observed in plains, hillock forests, rice fields, and open terrains neighboring forests. The species is assessed as VU D(1). Apart from the poisoning by pesticides through the food chain, damage of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Aegypius monachus Linneaus, 1766

Falconiformes: Accipitridae

Aegypius monachus is an internationally endangered species that migrates to the DMZ area. Population size is increasing and the extent of occurrence (EOO) is expanding to southern localities. This species is observed in grasslands and rocky mountains. The species is assessed as VU D(1). Destruction of natural habitats caused by development, poison baits, shortage of prey, and illegal hunting may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Aquila clanga Pallas, 1811

Falconiformes: Accipitridae

Aquila clanga is a winter visitor that migrates to the Cheonsu Bay of Chungcheongnam-do, Haenam area in Jeollanam-do, Jeju-do, and Socheong Island of Incheon. Only 3 individuals were observed in 2010 and a maximum of 27 individuals was observed in migratory season. This species is observed in deciduous broadleaf forests and coniferous forests neighboring wetlands of plains, rivers, and lakes. The species is assessed as VU A1ac; D(1). The species is regionally protected as Endangered Wildlife by the law.

Aquila heliaca Savigny, 1809

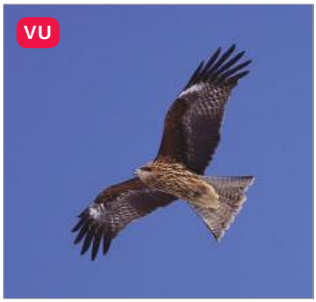
Falconiformes: Accipitridae

Aquila heliaca is a winter visitor that migrates locally to the Cheorwon area in Gangwon-do, Paju area in Gyeonggi-do, Cheonsu Bay of Chungcheongnam-do, Hyeongsan and Nakdong Rivers in Gyeongsangbuk-do, and Heuksan Island of Jeollanam-do. Although 1-16 individuals were observed from 1999 to 2010, the number of overwintering individuals is unstable. This species is observed at river estuaries, reclaimed arable lands, large reservoirs, and open terrains and plains around rivers. The species is assessed as VU A1ac; D(1). Reduction of natural habitats caused by loss of mountainous forests and arable lands, shortage of prey, and illegal hunting may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Haliaeetus albicilla Linneaus, 1758

Falconiformes: Accipitridae

Haliaeetus albicilla is a winter visitor that only a few individuals migrate throughout Korea. The observed number of individuals is small ranging from 1 to 8. This species is observed in reclaimed lands neighboring coasts and around large rivers, dams and watersides in inland. The species is assessed as VU D(1). Reduction of natural habitats caused by development of rivers, coasts, lakes, reclaimed lands, and dam estuaries may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.



Milvus migrans Boddaert, 1783

Falconiformes: Accipitridae

Milvus migrans is a resident bird that was previously known throughout Korea. However, in recent years the species has become a winter visitor and abundant individuals are observed at the south coast. Small numbers of individuals are also observed in other areas including the southern island areas and isolated island forests. The species is assessed as VU D(1). Fragmentation and degradation of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Pernis ptilorhyncus Temminck, 1821

Falconiformes: Accipitridae

Pernis ptilorhyncus is a bird that migrates frequently to island areas of the west and south coasts in spring and autumn. In the spring of 2009, 1,597 individuals were observed at Geoje Island of Gyeongsangnam-do and 4,372 individuals were observed at Socheong Island of Incheon in the autumn of the same year. The species is assessed as VU D(1). This species is observed in deciduous broadleaf forests and coniferous forests. Reduction of natural habitats in the form of forest loss may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Falco subbuteo Linnaeus, 1758

Falconiformes: Falconidae

Falco subbuteo is a small slim falcon that only a few individuals breed throughout Korea and the population has increased in recent years. This species is observed in forests of plain areas. The species is assessed as VU D(1). Destruction and fragmentation of natural habitats caused by construction for golf courses, industrial facilities, and housing may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Falco peregrinus Tunstall, 1771

Falconiformes: Falconidae

Falco peregrinus is a resident bird that is known throughout Korea. Populations have recovered slowly from the effects of DDT and organocholorine pesticides use in the mid-1960s following prohibition of these chemicals in the early 1970s. This species is observed in island areas along the coast, river estuaries, lakes, and arable lands. The species is assessed as VU D(1). Reduction of breeding and natural habitats caused by human developments may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Grus monacha Temminck, 1835

Gruiformes: Gruidae

Grus monacha is a transitory winter visitor that mainly migrates to the south localities. About 300 individuals were observed in the Cheonsu Bay of Chungcheongnam-do and Suncheon Bay of Jeollanam-do recently. This species is observed in wetlands neighboring large scaled arable lands. The species is assessed as VU D(1). Shortage of prey due to reduction of tidelands by dredging and reclamation, and reduction of natural habitats by loss of arable land may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Gallicrex cinerea Gmelin, 1789

Gruiformes: Rallidae

Gallicrex cinerea is a summer bird that was previously known throughout Korea. In recent years, only small numbers have been observed at the Cheorwon area in Gangwon-do, Paju area in Gyeonggi-do, and Seosan area in Chungcheongnam-do. This species is observed around rice fields, levees, and hill grasslands. The species is assessed as VU D(1). Destruction of natural habitats caused by refurbishment of rice fields and rivers, and shortage of prey may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Galerida cristata Linnaeus, 1758

Passeriformes: Alaudidae

Galerida cristata is a resident bird that was previously known from the north central areas. However, the species became rare recently and breeding was observed at Cheonsu Bay in Chungcheongnam-do. This species is observed in plains, open terrains, and grasslands. The species is assessed as VU D(1). Reduction and damage of natural habitats caused by reclamation, road construction, and overuse of pesticides may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Emberiza aureola Pallas, 1773

Passeriformes: Emberizidae

Emberiza aureola is a bird that passes through Korea in May and September in small populations. There is no breeding data available for this species in Korea. This species is observed in forests, arable lands, and reed fields. The species is assessed as VU A1c. Destruction of natural habitats caused by development and climate change may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Emberiza sulphurata Temminck and Schlegel, 1848

Passeriformes: Emberizidae

Emberiza sulphurata is a transitory bird that passes through Korea without breeding. Thirty six individuals were observed at Geoje Island in 1967. The species is recorded from forests with small trees, arable land, and grasslands with shrubs. The species is assessed as VU D(1). Reduction of natural habitats, overduse of insecticides, and illegal hunting for trade may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Emberiza yessoensis Swinhoe, 1874

Passeriformes: Emberizidae

Emberiza yessoensis is a winter visitor protected internationally that overwinters throughout Korea. This species is observed at plains, open terrains, and reed fields neighboring reclaimed lands. The species is assessed as VU D(1). Reduction of natural habitats caused by reclamation and river refurbishment may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Terpsiphone atrocaudata Eyton, 1839

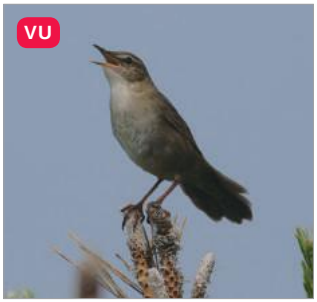
Passeriformes: Monarchidae

Terpsiphone atrocaudata is a summer visitor that migrates throughout Korea, especially in southern parts of Korea including Jeju-do. This species is observed in forested areas, coppices, and deciduous broadleaf forests. The species is assessed as VU A1c. Destruction of natural habitats caused by road construction, development for golf courses, and climate change may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Pitta nympha Temminck and Schlegel, 1850

Passeriformes: Pittidae

Pitta nympha is a summer visitor that migrates to Geoje Island of Gyeongsangnam-do, Jin Island of Jeollanam-do, and Jeju-do along western island areas. The extent of occurrence (EOO) of the species is critically limited. This species is observed in coppices and broadleaf forests along coasts, islands, and on inland slopes. The species is assessed as VU D(1). Reduction of breeding habitats caused by expansion of arable land and logging, and damage of mountainous forests may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.



Locustella pleskei Taczanowski, 1889

Passeriformes: Sylviidae

Locustella pleskei is a summer visitor that breeds along the west and south coasts, and eastern island areas. The species is observed in island shrubberies or grasslands. The species is assessed as VU D(1). Reduction of island breeding habitats and wetland overwintering habitats, pollution, and human interference may be threatening this species. The species is regionally protected as Endangered Species by the law.

Dryocopus martius Linnaeus, 1758

Piciformes: Picidae

Dryocopus martius is a resident bird that is known from the Samcheok area, Mt. Tabaek, and Mt. Odae in Gangwon-do, Gapyeong area in Gyeonggi-do, Mt. Songni in Chungcheongbuk-do, Mt. Seongju in Chungcheongnam-do, and Uljin area in Gyeongsangbuk-do. This species is observed in forests with mature oaks and pine trees. The species is assessed as VU A1c. Reduction of natural habitats caused by deforestation may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Bubo bubo Linnaeus, 1758

Strigiformes: strigidae

Bubo bubo is a resident bird that is known throughout Korea. This species is observed in rocky areas and rocky mountains. The species is assessed as VU D(1). Disconnection and fragmentation of natural habitats caused by loss of forests and road construction may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Strix aluco Pallas, 1771

Strigiformes: Strigidae

Strix aluco is a rare resident bird that is mainly known from Gangwon-do. The species is observed in coppices with oaks and coniferous trees. The species is assessed as VU A1c. Destruction and loss of natural habitats caused by thinning and removal of mature trees may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

2.3

Endangered Amphibians and Reptiles in the Republic of Korea

Hyla suweonensis Kuramoto, 1980

Anura: Hylidae

Hyla suweonensis is a frog endemic to Korea that was previously known from the Suwon area in Gyeonggi-do and Incheon. However, in recent years this species has been observed at the Pyeongtaek area in Gyeonggi-do, the Cheonan area in Chungcheongnam-do, and the Gangwha area in Incheon. Natural habitats and oviposition habitats are rapidly declining. This species is found in low elevation wetlands, especially, in rice fields. The species is assessed as EN B2ab(iv). Lowland development and use of pesticides may be threatening this species. There are currently no regional conservation measures.

Hynobius yangi Kim, Min and Matsui, 2003

Caudata: Hynobiidae

Hynobius yangi is a salamander endemic to Korea that is known from Ulju and Yangsan areas in Gyeongsangnam-do and Busan. The extent of occurrence (EOO) of the species is estimated to be less than 5,000 km^2. This species is found in low elevation wetlands, especially, in rice fields. The species is assessed as EN B1ab(iii). Destruction of natural habitats and oviposition habitats caused by reduction of rice fields, housing, road development, and water pollution may be threatening this species. The species regionally protected as Hunting Prohibited Wild Animals by the law.

Kaloula borealis (Barbour), 1908

Anura: Microhylidae

Kaloula borealis is a frog that was previously known throughout Korea. Though about 2,550 individuals have been observed at 67 locations, the population structure is genetically very poor (He=0.045). This species is mainly found in wetlands or greenbelt zones around the city. The species is assessed as VU A2c. Destruction of natural habitats and oviposition habitats caused by decrease of wetlands, housing, and road construction may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Rana plancyi chosenica Okada, 1931

Anura: Ranidae

Rana plancyi chosenica is a frog endemic to Korea that was previously known from western parts of Korea including Jeju-do. However, this species has been observed in small populations in Gyeonggi-do, Chungcheongbuk-do, Gyeongsangbuk-do, Gyeongsangnam-do, Jeollabuk-do, Jeollanam-do, and Incheon in recent years. The extent of occurrence (EOO) of the species is estimated to be less than 2,000 km^2. This species is mainly found in rice fields. The species is assessed as VU B2ab(iii,iv). Apart from the predation by *Rana catesbeiana*, reduction of natural habitats and oviposition habitats caused by decrease of rice fields, housing, road construction, and water pollution may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Karsenia koreana Min, Yang, Bonett, Vieites, Brandon and Wake, 2005

Caudata: Plethodontidae

Karsenia koreana is a salamander endemic to Korea that is widely known from Chungcheongbuk-do, Chungcheongnam-do, Gyeongsangnam-do, Jeollabuk-do, and Jeollanam-do. The estimated number of individuals is small and the extent of occurrence (EOO) of the species is estimated to be less than 2,000 km². This species is mainly found under rocks or mature trees in forests. The species is assessed as VU C2a(i). Destruction of natural habitats may be threatening this species. There are currently no regional conservation measures.

Elaphe schrenckii (Strauch), 1873

Squamata: Colubridae

Elaphe schrenckii is a large snake that is widely known throughout Korea except Jeju-do. The number of individuals has declined for the past 50 years, only 1 or 2 individuals are observed recently. This species is found in forests, arable lands, and around watersides and houses. The species is assessed as EN A1ac. Destruction of natural habitats and illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Sibynophis chinensis (Güther), 1889

Squamata: Colubridae

Sibynophis chinensis is a snake that is only known from Jeju-do. The estimated number of individuals is very small. This species is found in pastures or abandoned ranches. The species is assessed as EN D1,2. Destruction of natural habitats by various developments may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Eremias argus Peters, 1869

Squamata: Lacertidae

Eremias argus is a snake known from the west coast, Mt. Seorak, the Han River and the Nakdong River drainage areas. The number of populations has been declining and the number of observed locations has declined over 70%. This species is found in forests, coastal regions, riverine sandbars, and river delta zones. The species is assessed as EN A1ac. Destruction of natural habitats caused by river development may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Chinemys reevesii (Gray), 1831

Testudinata: Testudinidae

Chinemys reevesii is a turtle known throughout Korea. The estimated number of individuals is small and the extent of occurrence (EOO) of the species is estimated to be less than 2,000 km^2. This species is found at rivers or lakes. The species is assessed as VU B2ab(ii). Apart from the larva predation by *Rana catesbeiana* and competition with *Trachemys scripta elegans*, habitat alteration and over-harvesting may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Pelodiscus sinensis (Wiegmann), 1834

Testudinata: Trionychidae

Pelodiscus sinensis is a turtle known throughout Korea. The extent of occurrence (EOO) of the species is estimated to be less than 20,000 km^2. This species is found in the muddy soil of rivers or lakes. The species is assessed as VU B1ab(i). Disappearance of natural habitats and oviposition habitats caused by environment pollution and indiscriminate collection for edible and medicinal use may be threatening this species. There are currently no regional conservation measures.

2.4

Endangered Fish in the Republic of Korea

RE

Leiocassis longirostris Güunther, 1864

Siluriformes: Bagridae

Leiocassis longirostris is a large benthic fish that was previously known from the Han River, Imjin River, and Geum River drainages. However, the species has not been observed since 1970 and might be regionally extinct. This species inhabits large rivers with slow-flowing water, and sandy and muddy riverbeds and estuaries. The species is assessed as RE. Destruction of estuaries caused by dam construction, indiscriminate collection, and water pollution may be threatening this species. Reintroduction has been attempted with individuals introduced from China since the 1970s. There are currently no regional conservation measures.

CR

Iksookimia pumila (Kim and Lee, 1987)

Cypriniformes: Cobitidae

Iksookimia pumila is a small benthic fish endemic to Korea that is known only from the Baek Stream of Jeollabuk-do. Natural habitats rapidly declined following construction of the Buan Dam in the 1990s. This species inhabits sandy and gravelly streams with moderate-flowing water. The species is assessed as CR B2ab(ii,iii); D2. Rapid reduction of natural habitats caused by construction of dams and reservoirs may be threatening this species. There are currently no regional conservation measures.

CR

Microphysogobio rapidus Chae and Yang, 1999

Cypriniformes: Cyprinidae

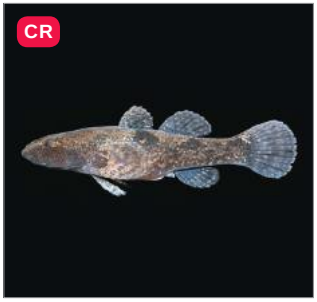
Microphysogobio rapidus is a small fish endemic to Korea that was previously known from about 10 areas in the Nakdong River drainage. However, in recent years the species has been observed only at the Sancheong area in Gyeongsangnam-do. The extent of occurrence (EOO) of this species is very narrow. This species inhabits the middle and lower sections of fast-flowing streams with gravelly streambeds. The species is assessed as CR B2ab(i,ii,iii,iv); D2. Destruction of natural habitats caused by channel improvement and dredging may be threatening this species. There are currently no regional conservation measures.

CR

Rhynchocypris semotilus Jordan and Starks, 1905

Cypriniformes: Cyprinidae

Rhynchocypris semotilus is a small neustonic fish endemic to Korea that is known only from the Songhyeon Stream and the Nam River drainage of Gangwon-do. This species inhabits the bottom of cold fresh water streams with rocky beds and boulders. The species is assessed as CR D2. Very narrow extent of occurrence (EOO) and very small population size may be threatening this species. There are currently no regional conservation measures.



Odontobutis obscura (Temminck and Schlegel, 1845)

Perciformes: Odontobutidae

Odontobutis obscura is a freshwater sleeper that is known only from the Sanyang Stream on Geoje Island of Gyeongsangnam-do. The estimated number of individuals is very small and the extent of occurrence (EOO) of the species is estimated to be less than 10 km2. This species inhabits the middle and lower sections of slow-flowing streams with sandy or muddy streambeds. The species is assessed as CR D2. Destruction of natural habitats caused by channel improvement and water pollution may be threatening this species. There are currently no regional conservation measures.

Cobitis choii Kim and Son, 1984

Cypriniformes: Cobitidae

Cobitis choii is a small benthic fish endemic to Korea that is only known from the Geum River drainage. The area of occupancy (AOO) of the species is estimated to be 12 km^2. This species inhabits streams with low-flowing water and sandy streambeds. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction of natural habitats caused by water pollution, channel improvement, and dredging may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Koreocobitis naktongensis Kim, Park and Nalbant, 2000

Cypriniformes: Cobitidae

Koreocobitis naktongensis is a small benthic fish endemic to Korea that was previously known throughout the Nakdong River drainage. However, in recent years the species has been observed only at the Goryeong and Yeongcheon areas in Gyeongsangbuk-do, and the Sancheong area in Gyeongsangnam-do. The area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species inhabits moderate-flowing streams with gravelly and bouldered bottoms. The species is assessed as EN B2ab(i,ii,iii,iv). Reduction and fragmentation of natural habitats caused by environment pollution, dam construction, and channel improvement, and illegal fishing for edible use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Acheilognathus somjinensis Kim and Kim, 1991

Cypriniformes: Cyprinidae

Acheilognathus somjinensis is a small fish endemic to Korea that is only known from the Seomjin River drainage. The area of occurrence (AOO) of the species is estimated to be less than 500 km^2. This species inhabits stream edges with slow-flowing water, colonized water weeds, and sandy and gravelly bottoms. The species is assessed as EN B2ab(i,ii,iii,iv). Apart from reduction of host shells and predation by invasive *Micropterus salmoides*, destruction and fragmentation of natural habitats caused by water pollution and channel improvement may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Kichulchoia brevifasciata (Kim and Lee, 1996)

Cypriniformes: Cyprinidae

Kichulchoia brevifasciata is a small benthic fish endemic to Korea that is only known from Geogeum Island and Geumo Island of Jeollanam-do. The area of occurrence (AOO) of the species is estimated to be less than 500 km^2. This species inhabits moderate-flowing streams with sandy and gravelly streambeds. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction of natural habitats caused by urban development and environment pollution may be threatening this species. There are currently no regional conservation measures.

Microphysogobio koreensis Mori, 1935

Cypriniformes: Cyprinidae

Microphysogobio koreensis is a small fish endemic to Korea that was previously known from the Seomjin River and Nakdong River drainages. However, in recent years the species has been observed only in the Imsil area in Jeollabuk-do around the Seomjin River drainage and the Sancheong area in Gyeongsangnam-do around the Nakdong River drainage. This species inhabits the middle and lower sections of fast-flowing streams with sandy and gravelly streambeds. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction of natural habitats caused by water pollution, channel improvement, and dredging may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Phoxinus phoxinus Linnaeus, 1758

Cypriniformes: Cyprinidae

Phoxinus phoxinus is a small fish that is only known from the Namhan River and the Osip Stream of Gangwon-do. The area of occurrence (AOO) of the species is estimated to be less than 500 km^2. This species inhabits clear and low temperature rivers and streams with rocky and bouldered bottoms in mountains. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction and fragmentation of natural habitats caused by water pollution, channel improvement, and water temperature rise may be threatening this species. There are currently no regional conservation measures.

Pseudopungtungia nigra Mori, 1935

Cypriniformes: Cyprinidae

Pseudopungtungia nigra is a small fish endemic to Korea that is known only from the Geum River drainage and the Mangyeong River. The area of occupancy (AOO) of the species is estimated to be less than 500km^2. This species inhabits clear streams with bouldered bottoms. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction of natural habitats caused by channel improvement, dredging and dam construction, and water pollution may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

EN

Rhodeus pseudosericeus Arai, Jeon and Ueda, 2001

Cypriniformes: Cyprinidae

Rhodeus pseudosericeus is a small fish endemic to Korea that is only known from the Han River drainage and Muhan Stream running into the west coast. The area of occupancy (AOO) of the species is estimated to be less than 500 km^2. The extent of occurrence (EOO) of the species is very narrow and the estimated population size is very small. The species inhabits the upper and middle sections of slow-flowing streams with bouldered bottoms. The species is assessed as EN B2ab(i,ii,iii,iv). Apart from reduction of host shells, quality deterioration of natural habitats caused by water pollution may be threatening this species. There are currently no regional conservation measures.

EN

Saurogobio dabryi Bleeker, 1871

Cypriniformes: Cyprinidae

Saurogobio dabryi is only known from the Imjin River and Han River drainages. The estimated number of individuals is very small. This species inhabits the lower section of large rivers with sandy bottoms. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction of natural habitats caused by water pollution, estuary bank and dam construction, and dredging may be threatening this species. There are currently no regional conservation measures.

EN

Coreoperca kawamebari Temminck and Schlegel, 1842

Perciformes: Centropomidae

Coreoperca kawamebari is a carnivorous fish that was previously known from coastal streams throughout Korea. However, in recent years the species has been observed only in the Tamjin River and nearby streams. The area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species inhabits stream edges with slow-flowing water, colonized water weeds or stream-side plants, and gravelly bottoms. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction and fragmentation of natural habitats caused by water pollution, dam construction, channel improvement, and dredging may be threatening this species. There are currently no regional conservation measures.

EN

Liobagrus obesus Son, Kim and Choo, 1987

Siluriformes: Amblycipitidae

Liobagrus obesus is a small benthic fish endemic to Korea that was previously known from the Geum River drainage and nearby rivers, and streams including the Mangyeong River, Yeongsan River, Eungcheon Stream. However, in recent years this species has not been observed in the Eungcheon Stream in Chungcheongnam-do. The area of occupancy (AOO) of the species is estimated to be less than 500 km2. This species inhabits riffles with slow-flowing water and gravelly and bouldered riverbeds. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction of natural habitats caused by water pollution and channel improvement may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Pseudobagrus brevicorpus Mori, 1936

Siluriformes: Bagridae

Pseudobagrus brevicorpus is a small benthic fish endemic to Korea that was previously known from the Geum River and Nakdong River drainages. However, in recent years the species has been observed only in the Yeongcheon and Goryeong areas in Gyeongsnagbuk-do around the Geumho River, and the Hamyang and Sancheong areas in Gyeongsnagnam-do around the Nam River and in the Nakdong River drainage. The area of occupancy (AOO) of the species is estimated to be less than 500 km². This species inhabits clear and gravelly rivers. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction of natural habitats caused by water pollution, channel improvement and dredging may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

Lethenteron japonicum (Martens, 1868)

Petromyzontiformes: Petromyzontidae

Lethenteron japonicum is a parasitic cyclostomous fish that was previously known widely from east and south coastal streams and rivers throughout Korea. However, in recent years the species has been observed only at the Baebong Stream of the Goseong area, the Namdae Stream of the Yangyang area and the Yeongok Stream of the Gangneung area in Gangwon-do, and the Seomjin River drainage. The area of occupancy (AOO) of the species is estimated to be less than 500 km². This species spawns its eggs at sandy and gravelly bottoms of rivers. The species is assessed as EN B2ab(i,ii,iii,iv). Destruction of natural habitats caused by environment pollution and channel improvement, and illegal collection for medicinal use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Culter brevicauda Güther, 1868

Cypriniformes: Cyprinidae

Culter brevicauda is a relatively big fish that was previously known from the Nakdong River and Geum River drainages, the Yeongsan River, the Andong Dam, the Imha Dam, and the Hapcheon Dam. However, in recent years the species has been observed only in the Nakdong River drainage. The area of occupancy (AOO) of the species is estimated to be less than 500 km². This species inhabits rivers with slow-flowing water and sandy bottoms. The species is assessed as VU B2ab(i,ii,iii,iv). Destruction of natural habitats caused by water pollution, estuary bank construction, and channel improvement may be threatening this species. There are currently no regional conservation measures.

Gobiobotia brevibarba Mori, 1935

Cypriniformes: Cyprinidae

Gobiobotia brevibarba is a small benthic fish endemic to Korea that is known from the Imjin River, Han River and Geum River drainages. The area of occupancy (AOO) of the species is estimated to be less than 2,000 km². This species inhabits the upper and middle sections of fast-flowing rivers with rocky and bouldered bottoms. The species is assessed as VU B2ab(i,ii,iii,iv). Reduction of natural habitats caused by channel improvement and dam construction may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Gobiobotia macrocephala Mori, 1935

Cypriniformes: Cyprinidae

Gobiobotia macrocephala is a small benthic fish endemic to Korea that is only known from the Imjin River, Han River and Geum River drainages. The area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species inhabits the upper and middle sections of fast-flowing rivers with gravelly and bouldered bottoms. The species is assessed as VU B2ab(i,ii,iii,iv). Disturbance and reduction of natural habitats caused by dam construction and channel improvement may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Gobiobotia naktongensis Mori, 1935

Cypriniformes: Cyprinidae

Gobiobotia naktongensis is a small benthic fish endemic to Korea that is known from the Imjin River, Han River, Geum River, and Nakdong River drainages. The area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species inhabits rivers with fast-flowing water and sandy bottoms. The species is assessed as VU B2ab(i,ii,iii,iv). Disturbance of natural habitats caused by water pollution, channel improvement, and dredging may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Hemibarbus mylodon (Berg, 1907)

Cypriniformes: Cyprinidae

Hemibarbus mylodon is a gobionine fish endemic to Korea that was previously known from the Han River and Geum River drainages and the Imjin River. However, in recent years the species has been regionally extinct in the Geum River drainage and observed only at the upper and middle sections of the Imjin River and Han River drainage. The area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species inhabits deep freshwater with gravelly bottoms. The species is assessed as VU B2ab(i,ii,iii,iv). Disturbance of natural habitats caused by water pollution, dam construction, and channel improvement may be threatening this species. The species is regionally protected as Natural Heritage by the law.

Pungitius sinensis (Guichenot, 1869)

Gasterosteiformes: Gasterosteidae

Pungitius sinensis is a small fish that is known from east coastal streams. The extent of occurrence (EOO) of the species is estimated to be less than 500 km^2. This species inhabits very slow-flowing streams or lentic water. The species is assessed as VU B2ab(i,ii,iii,iv). Destruction and reduction of natural habitats caused by water pollution, channel improvement, and dredging may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Brachimystax lenok tsinlingensis (Li, 1966)

Salmoniformes: Salmonidae

Brachimystax lenok tsinlingensis is a freshwater fish that is known from several streams in Gangwon-do and Gyeongsangbuk-do. The area of occurrence (AOO) of the species is estimated to be less than 500 km^2. This species inhabits the upper section of streams with cold fresh water. The species is assessed as VU B2ab(i,ii,iii,iv). Destruction of natural habitats caused by channel improvement may be threatening this species. The species is regionally protected as Natural Heritage by the law.

Cottus hangiongensis Mori, 1930

Scorpaeniformes: Cottidae

Cottus hangiongensis is a small benthic fish that is known from the lower section of east coastal rivers. The area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species inhabits riffles with fast-flowing water and gravelly and bouldered riverbeds. The species is assessed as VU B2ab(i,ii,iii,iv). Destruction of natural habitats by water pollution and channel improvement may be a main threat this species. The species is regionally protected as Endangered Wildlife by the law.

Lethenteron reissneri (Dybowski, 1869)

Petromyzontiformes: Petromyzontidae

Lethenteron reissneri is a land-locked fish that is known throughout Korea except Jeju Island. The estimated number of individuals is fewer than 5. The area of occupancy (AOO) of the species is estimated to be less than 2,000 km^2. This species inhabits small streams or reservoirs with sandy and muddy bottoms. The species is assessed as VU B2ab(i,ii,iii,iv). Disturbance and fragmentation of natural habitats caused by environment pollution and channel improvement may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

2.5

Endangered Insects in the Republic of Korea

Lepidoptera
Coleoptera
Ephemeroptera
Plecoptera
Trichoptera
Odonata

RE

Gymnopleurus mopsus (Pallas, 1781)

Coleoptera: Scarabaeidae

Gymnopleurus mopsus is a dung beetle previously known throughout Korea. However, there is no data available for this species since the 1970s and the species might be regionally extinct. This species is found in animal mucks. The species is assessed as RE. Reduction of livestock grazing and environment pollution may be threatening this species. There are currently no regional conservation measures.

CR

Cicindela coerulea nitida Lichtenstein, 1797

Coleoptera: Carabidae

Cicindela coerulea nitida is a tiger beetle previously known from several areas in Gangwon-do, Gyeonggi-do, Chungcheongnam-do, Gyengsangbuk-do, and Jeollabuk-do. Though this species was collected at Mt. Palgongsan in Daegu in 1991, the species has not been recorded in recent years and is now considered nearly extinct in Korea. This species found in hillocks. The species is assessed as CR A2ac; B1b(iii). Climate change and loss of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

CR

Callipogon relictus Semenov-Tian-Shansky,1899

Coleoptera: Cerambycidae

Callipogon relictus is a longhorn beetle previously known from Gangwon-do, Gyeonggi-do, and Mt. Bukhan in Seoul. However, in recent years this species has been recorded only at the Gwangneung arboretum in Gyeonggi-do and the observed number of populations is very small. This species is found in lowland broadleaf forests. The species is assessed as CR A1(a,c); B1, B2(a). Disturbance of natural habitats, illegal collection, and climate change may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.

CR

Polyphylla laticollis manchurica Semenov, 1900

Coleoptera: Melolonthidae

Polyphylla laticollis manchurica is a chafer previously known from Gangwon-do, Gyeonggi-do, Chungcheongnam-do, Gyeongsangbuk-do, and Jeju-do. However, in recent years this species has been recorded only at the Nonsan area in Chungcheongnam-do. The adults are found in broadleaf forests near rivers, and larvae are found in riverine sands and on sandy soil in forests. The species is assessed as CR A2ac; B1ab(i,iii). Loss of natural habitats caused by river development projects may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

CR

Scarabaeus typhon (Fischer-Waldheim, 1923)

Coleoptera: Scarabaeidae

Scarabaeus typhon is a dung beetle previously known throughout Korea except Jeju-do. However, there is no data available for this species since it was recorded in the Jangheung area of Jeollanam-do in 2004. This species is found in pastures. The species is assessed as CR A2ac; B1b(i,iii). Degradation of quality of natural habitats caused by livestock grazing and environment pollution may be threatening this species. There are currently no regional conservation measures.

CR

Sisyphus schaefferi (Linnaeus, 1758)

Coleoptera: Scarabaeidae

Sisyphus schaefferi is a dung beetle previously known throughout Korea. However, there is no data available for this species since it was recorded at the Yeongwol area in Gangwon-do in the early 1990s. The species is found in pastures. The species is assessed as CR A2ac; B1ab(i,iii). Reductions of natural habitats caused by livestock grazing and use of compound feeds may be threatening this species. There are currently no regional conservation measures.

CR

Blaps japonensis Marseul, 1879

Coleoptera: Tenebrionidae

Blaps japonensis is a darkling beetle previously known from Gangwon-do, Gyeonggi-do, and Gyeongsangnam-do. However, in recent years this species has been recorded only in Jeju-do. This species is found on sandy soil. The species is assessed as CR B1ab(i,iii)+2ab(ii,iii). Loss of natural habitats may be threatening this species. There are currently no regional conservation measures.

CR

Burara striata (Hewitson, 1867)

Lepidoptera: Hesperidae

Burara striata is a butterfly known only from the Gwangneung arboretum in Gyeonggi-do. During the past 5 years observational data available for this species has been extremely scarce and its ecological features are not yet identified. This species is found in conserved forests dominated by deciduous broadleaf trees. The species is assessed as CR A1(a,d); B1ab(i); C2a(i). Illegal collection and climate change may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

CR

Maculinea kurentzovi Sibatani, Saigusa et Hirowatari, 1994

Lepidoptera: Lycaenidae

Maculinea kurentzovi is a symbiotic butterfly of ants that is known from the Yoengwol area in Gangwon-do and Danyang area in Chungcheongbuk-do. In recent years the observed number of populations is about 2. This species is found in dry shrubberies of low mountains. The species is assessed as CR A1(a,d); C2a(i). Indiscriminate collection, destruction of natural habitats caused by environment change, and loss of grassland habitats may be threatening this species. There are currently no regional conservation measures

CR

Plebejus subsolanus (Eversmann, 1851)

Lepidoptera: Lycaenidae

Plebejus subsolanus is a butterfly known only from Mt. Taebaek in Gangwon-do. There is no recent observational data available for this species. This species is found in grasslands near valleys of tall mountains. The species is assessed as CR A1(a,d); B1ab(i); C2a(i). Indiscriminate collection and the destruction of natural habitats for parking lots and hiking trail expansion may be threatening this species. There are currently no regional conservation measures.

CR

Shijimaeoides divina (Fixsen, 1887)

Lepidoptera: Lycaenidae

Shijimaeoides divina is a butterfly that was previously known from Gyeonggi-do, Cheongchungbuk-do, Cheongchungnam-do, and Gyeongsangbuk-do. However, in recent years this species has been observed only at the Samcheok area in Gangwon-do and the observed number of populations is 2-3. This species is found in grassland hillocks near arable lands. The species is assessed as CR A1(a,d); C2a(i). Illegal collection and loss of grassland habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

CR

Melitaea britomartis (Assmann, 1847)

Lepidoptera: Nymphalidae

Melitaea britomartis is a cold temperate butterfly known throughout Korea. However, in recent years this species has been observed at the Hwasun area in Jeollanam-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 3 areas. This species is found in low mountainous grasslands. The species is assessed as CR A1(a,d); C2a(i). Climate change and loss of grassland habitats may be threatening this species. There are currently no regional conservation measures.

CR

Aporia crataegi (Linnaeus, 1758)

Lepidoptera: Pieridae

Aporia crataegi is a butterfly known from the Yeongwol area in Gangwon-do. However, in recent years this species has been observed only at the Samcheok area in Gangwon-do and the species is genetically instable due to its very small number of individuals. This species is found in mountainous shrubberies neighboring arable lands. The species is assessed as CR A1(a,d); C2a(i). Illegal collection and loss of grassland habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

EN

Abroscelis anchoralis punctatissima Schaum,1863

Coleoptera: Carabidae

Abroscelis anchoralis punctatissima is a tiger beetle previously known from Gyeonggi-do, Chungcheongnam-do, Jeollabuk-do, Jeollanam-do, and Incheon. However, in recent years this species has been recorded only at the Taean area in Chungcheongnam-do and Sinan area in Jeollanam-do. This species is found in sandy coasts. The species is assessed as EN A2ac;B1ab(i,iii). Loss of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

EN

Cybister lewisianus Sharp, 1873

Coleoptera: Dytiscidae

Cybister lewisianus is a diving beetle previously known from Gyeonggi-do, Gyeongsangbuk-do, and Jeollanam-do. However, in recent years this species has been recorded only from Gyeonggi-do and Chungcheongnam-do. This species is found in ponds and irrigation canals near rice fields. The species is assessed as EN A2ac; B1ab(i,ii). Loss of natural habitats and use of pesticides may be threatening this species. There are currently no regional conservation measures.

EN

Onthophagus gibbulus (Pallas, 1781)

Coleoptera: Scarabaeidae

Onthophagus gibbulus is a dung beetle previously known throughout Korea. However, this species has been recorded only in several areas of Gangwon-do since 2000. This species is found in mucks of cattle. The species is assessed as EN A2ac; B1ab(i,iii). Reduction of livestock grazing and loss of natural habitats may be threatening this species. There are currently no regional conservation measures.

EN

Onthophagus solivagus Harold, 1886

Coleoptera: Scarabaeidae

Onthophagus solivagus is a dung beetle previously known throughout Korea except Gyeongsangnam-do and Jeju-do. However, there is no data available for this species since 1990. This species is found in sandy soil around rivers and in mucks of cattle and sheep. The species is assessed as EN A2ac. Reduction of livestock grazing and loss of natural habitats may be threatening this species. There are currently no regional conservation measures.

EN

Nicrophorus japonicus Harold, 1877

Coleoptera: Silphidae

Nicrophorus japonicus is a burying beetle previously known throughout Korea. However, there is no data available for this species since the late 1990s. This species is found in open lands neighboring hillocks or streams. The species is assessed as EN A2ac. Destruction of natural habitats may be threatening this species. There are currently no regional conservation measures.

EN

Carterocephalus dieckmanni Graeser, 1888

Lepidoptera: Hesperidae

Carterocephalus dieckmanni is a butterfly known from Gangwon-do, Gyeonggi-do, and Gyeongsangnam-do. The species has been frequently observed within its known distribution in recent years. This species is found in grasslands neighboring mountains. The species is assessed as EN A1(a,d). Climate change and loss of grassland habitats may be threatening this species. There are currently no regional conservation measures.

EN

Leptalina unicolor (Bremer et Grey. 1853)

Lepidoptera: Hesperidae

Leptalina unicolor is a butterfly known from several areas in Gangwon-do and Gyeongsangbuk-do. The estimated number of populations is very small, the area of occupancy (AOO) of the species is limited, and the extent of occurrence (EOO) of the species is estimated to be fewer than 5 areas. This species is found in grasslands near rivers, railroads, and wetlands. The species is assessed as EN A1(a,d); B1ab(i); C2a(i). Climate change, river refurbishment and loss of grassland habitats may be threatening this species. There are currently no regional conservation measures.

Arhopala bazalus (Hewitson, 1862)

Lepidoptera: Lycaenidae

Arhopala bazalus is a butterfly known only from the Seonheul area in Jeju-do. The estimated number of individuals is very small. This species is found in indeciduous forests. The species is assessed as EN A1(a,d); B1ab(i). Destruction of natural habitats due to various developments may be threatening this species. There are currently no regional conservation measures.

Arhopala japonica (Murray, 1875)

Lepidoptera: Lycaenidae

Arhopala japonica is a butterfly known only from the Seonheul area in Jeju-do. The area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species is found in indeciduous forests. The species is assessed as EN A1(a,d); B1ab(i). Destruction of indeciduous forests for golf courses and pasture constructions may be threatening this species. There are currently no regional conservation measures.

Favonius koreanus Kim. 2006

Lepidoptera: Lycaenidae

Favonius koreanus is the only butterfly endemic to Korea known from several areas in Gangwon-do and Gyeonggi-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas and the area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species is found in broadleaf forests dominated by oaks. The species is assessed as EN A1(a,d). Apart from forest succession, loss of natural habitats and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Plebejus argus (Linnaeus, 1758)

Lepidoptera: Lycaenidae

Plebejus argus is a butterfly known only from Mt. Halla in Jeju-do. The number of individuals has been declining in recent years. This species is found in humid areas with volcanic rocks over 1,300 m above sea level. The species is assessed as EN B1ab(i). Climate change may be threatening this species and there are currently no regional conservation measures.

EN

Satyrium latior (Fixsen, 1887)

Lepidoptera: Lycaenidae

Satyrium latior is a butterfly that known only from the Yeongwol and Jeongseon areas in Gangwon-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 5 areas and the area of occupancy (AOO) of the species is estimated to be less than 500 km^2. This species is found in valleys with deciduous forests dominated by elms and dry shrubberies. The species is assessed as EN A1(a,d). Apart from forest succession, climate change and loss of natural habitats due to afforestation may be threatening this species. There are currently no regional conservation measures.

EN

Shirozua jonasi (Janson, 1877)

Lepidoptera: Lycaenidae

Shirozua jonasi is a symbiotic butterfly of ants that is only known from several areas in Gangwon-do and Gyeonggi-do. The number of individuals has been declining in recent years. This species is found in deciduous broadleaf forests dominated by oaks. The species is assessed as EN A1(a,d); B1ab(i). Apart from decrease of ants caused by forest succession, climate change may be threatening this species. There are currently no regional conservation measures.

EN

Argynnis aglaja (Linnaeus, 1758)

Lepidoptera: Nymphalidae

Argynnis aglaja is a cold temperate butterfly known only from several areas in Gangwon-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 5 areas. This species is found in mountainous grasslands. The species is assessed as EN A1(a,d). Afforestation and climate change may be threatening this species. There are currently no regional conservation measures.

EN

Boloria thore (Hüner, 1803)

Lepidoptera: Nymphalidae

Boloria thore is a cold temperate butterfly known only from Mt. Odae in Gangwon-do. The extent of occurrence (EOO) of the species is limited only single area. In recent years, this species is not observed and considered as almost regionally extinct in Korea. This species is found in grasslands near deciduous forests. The species is assessed as EN A1(a,d). Loss of grassland habitats due to afforestation and climate change may be threatening this species. There are currently no regional conservation measures.

Hipparchia autonoe (Esper, 1783)

Lepidoptera: Nymphalidae

Hipparchia autonoe is a cold temperate butterfly known only from Mt. Halla in Jeju-do. The number of individuals has been declining in recent years. This species is found in tall mountainous grasslands. The species is assessed as EN A1(a,d); B1ab(i); C2a(i). Reduction of gramineous prey caused by the expansion of *Sasa borealis* and climate change may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Melitaea ambigua Mééri̇è, 1859

Lepidoptera: Nymphalidae

Melitaea ambigua is a cold temperate butterfly that is commonly known from the inlands throughout Korea. However, in recent year this species has been observed limitedly at several areas in Gangwon-do and the extent of occurrence (EOO) of the species is estimated to be fewer than 5 areas. The species is found near mountainous grasslands. The species is assessed as EN A1(a,d); C2a(i). Loss of grasslands caused by afforestation and climate change may be threatening this species. There are currently no regional conservation measures.

Melitaea protomedia Mééri̇è, 1859

Lepidoptera: Nymphalidae

Melitaea protomedia is a cold temperate butterfly known from Gangwon-do and the Aeweol area in Jeju-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in mountainous grasslands. The species is assessed as EN A1(a,d). Loss of grassland habitats and climate change may be threatening this species. There are currently no regional conservation measures.

Melitaea scotosia Butler, 1878

Lepidoptera: Nymphalidae

Melitaea scotosia is a cold temperate butterfly known from the Yeongwol area in Gangwon-do and Chunngcheogbuk-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in grasslands near mountainous shrubberies. The species is assessed as EN A1(a,d). Loss of grassland habitats caused by afforestation and climate change may be threatening this species. There are currently no regional conservation measures.

EN

Seokia pratti (Leech, 1890)

Lepidoptera: Nymphalidae

Seokia pratti is a butterfly known from Mt. Seorak and Mt. Odae in Gangwon-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 2 areas. This species is found in coniferous and broadleaf forests. The species is assessed as EN A1(a,d); C2a(i). Indiscriminate collection and climate change may be threatening this species. There are currently no regional conservation measures.

EN

Libellula angelina Selys, 1883

Odonata: Libellulidae

Libellula angelina is a rare dragonfly known from throughout Korea. The estimated number of individuals is small. This species found at ponds and wetlands near urban areas. The species is assessed as EN A2ac; B2ab(ii,iii). Loss of natural habitats caused by urban development, expansion of city, reclamation, and pollution may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

EN

Macromia daimoji Okumura, 1949

Odonata: Macromiidae

Macromia daimoji is a rare dragonfly known from throughout Korea. The estimated number of individuals and populations are very small. Larvae found in sandy sediments of the middle and lower sections of streams. The species is assessed as EN A2ca; B2ab(ii,iii). Loss of natural habitats by various development such as dredging may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

VU

Aphodius languidulus A. Schmidt, 1922

Coleoptera: Aphodiidae

Aphodius languidulus is a dung beetle previously known throughout Korea except Jeju-do. However, there is no data available for this species since the 1990s. This species is found in pastures. The species is assessed as VU A1ac; B1ab(i,iii). No major widespread threats have been reported to this species. There are currently no regional conservation measures.

Chrysochroa coreana Han & Park, 2012

Coleoptera: Buprestidae

Chrysochroa coreana is a jewel beetle previously known from Gangwon-do, Gyeongsangbuk-do, Jeollabuk-do, Jeollanam-do, and Jeju-do. However, in recent years this species has been recorded only at several areas of Jeollabuk-do and Jeollanam-do. This species is found on Chinese hackberries, cherry blossoms and indeciduous oaks. The species is assessed as VU A2acd; B1ab(i,ii,iii). Loss of natural habitats and illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered wildlife by the law.

Acoptolabrus changeonleei (Ishikawa Kim,1983)

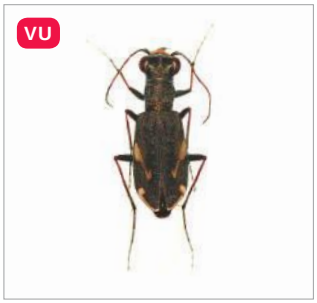
Coleoptera: Carabidae

Acoptolabrus changeonleei is a ground beetle endemic to Korea known only from Mt. Jiri in Jeollanam-do. This species is found in natural montane forests. The species is assessed as VU A2d; B1ab(i, ii). Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Callytron brevipilosa Horn, 1908

Coleoptera: Carabidae

Callytron brevipilosa is a tiger beetle previously known from Gangwon-do, Gyeonggi-do, Chungcheongbuk-do, Gyeongsangbuk-do, and Jeollabuk-do. However, in recent years this species has been recorded only in Gyeonggi-do, Chungcheongbuk-do and Jeollabuk-do. This species is found in riverine sands. The species is assessed as VU A2ac; B1ab(i,iii). Destruction of natural habitats caused by environmental deterioration may be threatening this species. There are currently no regional conservation measures.



Cicindela obliquefasciata Adams, 1817

Coleoptera: Carabidae

Cicindela obliquefasciata is a tiger beetle previously known throughout Korea. However, in recent years this species has been recorded only in Gyeonggi-do and Incheon. This species is found at dry soil near salt fields and estuaries. The species is assessed as VU A2ac; B1ab(i,iii). Loss of natural habitats caused by island development may be threatening this species. There are currently no regional conservation measures.

VU

Acanthocinus aedilis (Linnaeus, 1758)

Coleoptera: Cerambycidae

Acanthocinus aedilis is a longhorn beetle known only from Gangwon-do and Gyeonggi-do. This species is found in coniferous forests with various trees. The species is assessed as VU D1+2. Northing of populations caused by climate change may be threatening this species. There are currently no regional conservation measures.

VU

Lamia textor (Linnaeus, 1758)

Coleoptera: Cerambycidae

Lamia textor is a longhorn beetle known throughout Korea except southern areas. Though this species was frequently observed in the past, the estimated number of individuals is small in recent years. This species is found on willow trees. The species is assessed as VU A2ac; B1ab(i,iii). Apart from the interspecific competition, northing of populations caused by climate change may be threatening this species. There are currently no regional conservation measures.

VU

Leptepania japonica (Hayashi, 1948)

Coleoptera: Cerambycidae

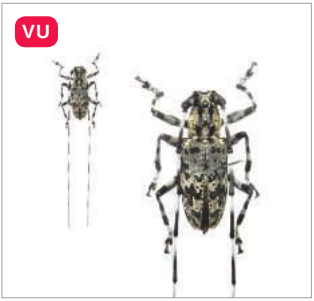
Leptepania japonica is a longhorn beetle previously known throughout Korea. However, in recent years this species has been recorded only at several areas in Gyeonggi-do. This species is found on trees belonging to Fragaceae, Salicaceae, Moraceae, and Betulaceae. The species is assessed as VU D1+2. No major widespread threats have been reported to this species. There are currently no regional conservation measures.

VU

Megaleptura thoracica (Creutzer, 1799)

Coleoptera: Cerambycidae

Megaleptura thoracica is a longhorn beetle previously known only from Ulleung Island of Gyeongsangbuk-do. However, in recent years this species has been recorded only at the Hongcheon and Hwacheon areas in Gangwon-do. This species is found in tall mountains. The species is assessed as VU D1+2. Climate change may be threatening this species. There are currently no regional conservation measures.



Palimna liturata continentalis (Semenov-Tian-Shansky, 1914)

Coleoptera: Cerambycidae

Palimna liturata continentalis is a longhorn beetle previously known only from Gangwon-do. However, in recent years this species has been recorded at several areas in Gyeonggi-do, Jeollanam-do, and Jeju-do. This species is found on Japanese elms, Japanese red pines, and Korean pines. The species is assessed as VU B1ab(i); D1+2. Destruction of natural habitats and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Rosalia coelestis Semenov-Tian-Shansky, 1911

Coleoptera: Cerambycidae

Rosalia coelestis is a longhorn beetle known only from several areas in Gangwon-do. This species was recorded at the Yangyang area in Gangwon-do in 2013. This species is found on Manchurian striped maple trees. The species is assessed as VU D1+2. Indiscriminate collection of host plants for medicinal use and climate change may be threatening this species. There are currently no regional conservation measures.

Stenygrinum quadrinotatum Bates, 1873

Coleoptera: Cerambycidae

Stenygrinum quadrinotatum is a longhorn beetle previously known throughout Korea. Though this species was frequently observed in the past, the number of populations and individuals are rapidly declining in recent years. This species is found in broadleaf forests dominated by oaks. The species is assessed as VU A2ba;Bab(i,iii). No major widespread threats have been reported to this species. There are currently no regional conservation measures.

Anthracophora rusticola Burmeister, 1842

Coleoptera: Cetoniidae

Anthracophora rusticola is a flower chafer previously known throughout Korea. However, the species has been recorded only at several inland areas in Korea in recent years. The species is found on the oaks. The species is assessed as VU A2ac; B1ab(i). Though no major widespread threats have been reported to this species, the disturbance of natural habitats and the soil acidification may be threatening this species. There are currently no regional conservation measures.

Osmoderma opicum Lewis, 1887

Coleoptera: Cetoniidae

Osmoderma opicum is a rare flower chafer known only from the north part of Gangwon-do. This species is found in maple trees. The species is assessed as VU D1+2. Though no major widespread threats have been reported to this species, illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Dytiscus marginalis czerskii Zaitzev, 1953

Coleoptera: Dytiscidae

Dytiscus marginalis czerskii is a diving beetle known from the Hwacheon and Inje areas in Gangwon-do, and Gyeonggi-do. This species is found in wetlands of tall mountains and hillock ponds. The species is assessed as VU B1ab(i,iii); D2. The narrow extent of occurrence (EOO) and water pollution may be threatening this species. There are currently no regional conservation measures.

Hydaticus thermonectoides Sharp, 1884

Coleoptera: Dytiscidae

Hydaticus thermonectoides is a diving beetle previously known from the Namyangju area in Gyeonggi-do. However, in recent years this species has been recorded only in several areas of Jeju-do. This species is found in ponds and reservoirs with rich aquatic plants. The species is assessed as VU B1ab(i,iii); D2. Loss of natural habitats and use of pesticides may be threatening this species. There are currently no regional conservation measures.

Bolbelasmus coreanus (Kolbe, 1886)

Coleoptera: Geotrupidae

Bolbelasmus coreanus is an earth-boring dung beetle previously known throughout Korea. However, in recent years this species has been recorded only in several areas of Gangwon-do, Chungcheongnam-do, Gyeongsangnam-do, and Jeollanam-do. The estimated number of populations is rapidly declining. There is no habitat data available for this species. The species is assessed as VU A2ac; B1ab(i,iii). No major widespread threats have been reported to this species. There are currently no regional conservation measures.

VU

Dineutus orientalis (Modeer, 1776)

Coleoptera: Gyrinidae

Dineutus orientalis is a whirligig beetle previously known throughout Korea. However, in recent years the species has been recorded only in Gyeongsangbuk-do, Gyeongsangnam-do, Jeollanam-do, Jeju-do, and Incheon. This species is found in montane valley. The species is assessed as VU A2ac; B1ab(i,iii). Loss of natural habitats and water pollution may be threatening this species. There are currently no regional conservation measures.

VU

Ametor scabrosus (Horn, 1873)

Coleoptera: Hydrophilidae

Ametor scabrosus is a water scavenger beetle known only from Mt. Odae in Gangwon-do. The extent of occurrence (EOO) of the species is very narrow and the estimated number of individuals is very small. This species is found in small montane valleys with leaf litter and sandy soil. The species is assessed as VU B1ab(i)+2ab(ii); D2. No major widespread threats have been reported to this species. There are currently no regional conservation measures.

VU

Leptaulax koreanus Nomura, Kon, Johki & Lee, 1993

Coleoptera: Lucanidae

Leptaulax koreanus is a stag beetle endemic to Korea known from the Gwangneung area in Gyeonggi-do. The extent of occurrence (EOO) of the species is narrow. This species is found on thin trees of forests. The species is assessed as VU D1+2. The narrow extent of occurrence and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

VU

Prosopocoilus astacoides blanchardi (Parry,1873)

Coleoptera: Lucanidae

Prosopocoilus astacoides blanchardi is a stag beetle known only from Jeju-do and Mt. Naejang in Jeollabuk-do. This species is found in mountainous broadleaf forests. The species is assessed as VU B1ab(i); D1+2. The narrow extent of occurrence and illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

VU

Onthophagus rugulosus Harold, 1885

Coleoptera: Scarabaeidae

Onthophagus rugulosus is a dung beetle previously known throughout Korea. However, this species has abruptly declined since 1990 and has not been recorded since the early 2000s. This species is found in animal mucks. The species is assessed as VU A1ac; B1ab(i,iii). No major widespread threats have been reported to this species. There are currently no regional conservation measures.

VU

Nicrophorus dauricus Motschulsky, 1860

Coleoptera: Silphidae

Nicrophorus dauricus is a burying beetle previously known from Gyeonggi-do, Gyeongsangbuk-do, and Chungcheongnam-do. Though there was an informal report of this species from an unspecified location in 2008, in recent years the species has not been recorded. This species is found in mountains. The species is assessed as VU B1ab(i,iii). Though no major widespread threats have been reported to this species, loss of natural habitats may be threatening this species. There are currently no regional conservation measures.

VU

Procloeon halla Bae and Park, 1997

Ephemeroptera: Baetidae

Procloeon halla is a mayfly endemic to Korea known only from Jeju-do. The estimated number of individuals is small and its ecological features are not identified yet. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species found at the upper reaches of streams. The species is assessed as VU A2ac; B2ab(ii,iii). Destruction of natural habitats and climate change may be threatening this species. There are currently no regional conservation measures.

VU

Hesperia florinda (Butler, 1878)

Lepidoptera: Hesperidae

Hesperia florinda is a butterfly known from several areas in Gangwon-do, Gyeongsangbuk-do, and Jeju-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in tall mountainous forests. The species is assessed as VU A1(a,d). Loss of grassland habitats caused by afforestation and climate change may be threatening this species. There are currently no regional conservation measures.

VU

Heteropterus morpheus (Pallas, 1771)

Lepidoptera: Hesperidae

Heteropterus morpheus is a butterfly known throughout Korea except western areas and Jeju-do. In recent years, the number of individuals has been declining. This species is found in mountainous forests. The species is assessed as VU A1(a,d). Loss of grassland habitats caused by afforestation and climate change may be threatening this species. There are currently no regional conservation measures.

VU

Ochlodes similis (Leech, 1893)

Lepidoptera: Hesperidae

Ochlodes similis is a butterfly known from several areas in Gangwon-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in tall mountainous grasslands. The species is assessed as VU A1(a, d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Ochlodes venatus (Bremer et Grey, 1853)

Lepidoptera: Hesperidae

Ochlodes venatus is a butterfly known from several mountains in Gangwon-do, Gyeonggi-do, Gyeongsangbuk-do, Jeju-do, and Mt. Jiri in Jeollanam-do. This species is found in low mountainous grasslands. The species is assessed as VU A1(a, d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Pyrgus maculatus (Bremer et Grey, 1853)

Lepidoptera; Hesperidae

Pyrgus maculatus is a butterfly known from the inlands throughout Korea including Jeju-do. This species is found in mountainous grasslands. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats may be threatening this species. There are currently no regional conservation measures.

VU

Pyrgus malvae (Linnaeus, 1758)

Lepidoptera: Hesperidae

Pyrgus malvae is a butterfly known from several areas in Gangwon-do and Gyeongsangbuk-do. This species is found in mountainous grasslands. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats may be threatening this species. There are currently no regional conservation measures.

VU

Maculinea teleius (Bergsträser, 1779)

Lepidoptera: Lycaenidae

Maculinea teleius is a symbiotic butterfly of ants that is known from several areas in Gangwon-do. The observed number of populations is about 5. This species is found in grasslands neighboring valleys and deciduous broadleaf forests. The species is assessed as VU A1(a,d); C2a(i). Indiscriminate collection and reduction of the extent of occurrence (EOO) of ants caused by loss of grasslands may be threatening this species. There are currently no regional conservation measures.

VU

Neozephyrus japonicus (Murray, 1875)

Lepidoptera: Lycaenidae

Neozephyrus japonicus is a butterfly known from several areas in Gangwon-do and Gyeonggi-do. The area of occupancy (AOO) of the species is estimated to be 500 km^2 and the extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. The species is found in mountainous valleys and alder forests. The species is assessed as VU A1(a,d); B1ab(i). Indiscriminate collection and loss of host plants caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Protantigius superans (Oberthü, 1914)

Lepidoptera: Lycaenidae

Protantigius superans is a butterfly known only from Gangwon-do. This species is found in deciduous broadleaf forests at about 1,000 m above sea level. The species is assessed as VU A1(a,d); B1ab(i). Indiscriminate collection, climate change, and loss of host plants may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

VU

Satyrium w-album (Knoch, 1782)

Lepidoptera: Lycaenidae

Satyrium w-album is a butterfly known from several areas in Gangwon-do. The area of occupancy (AOO) of the species is estimated to be 500 km^2 and the extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found near Japanese elm forests. The species is assessed as VU A1(a,d). Climate change and loss of natural habitats caused by afforestation may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

VU

Spindasis takanonis (Matsumura, 1906)

Lepidoptera: Lycaenidae

Spindasis takanonis is a butterfly known from several areas in Gangwon-do, Gyeonggi-do, Chungcheongbuk-do, and Jeollanam-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in Japanese red pine forests neighboring urban area. The species is assessed as VU A1(a,d). Indiscriminate collection and loss of urban forests by urbanization may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

VU

Thecla betulae (Linnaeus, 1758)

Lepidoptera: Lycaenidae

Thecla betulae is a butterfly known from the north part of Mt. Jiri in Jeollanam-do. This species is found near deciduous broadleaf forests. The species is assessed as VU A1(a,d). Indiscriminate collection and exposure to pesticide on host plants may be threatening this species. There are currently no regional conservation measures.

VU

Aglais urticae (Linnaeus, 1758)

Lepidoptera: Nymphalidae

Aglais urticae is a cold temperate butterfly known from several areas in Gangwon-do and the extent of occurrence (EOO) of the species is very narrow. This species is found in forests near valleys and ridges. The species is assessed as VU A1(a,d,e). Quality deterioration of habitats caused by climate change may be threatening this species. There are currently no regional conservation measures.

VU

Apatura ilia (Denis et Schiffermüler, 1775)

Lepidoptera: Nymphalidae

Apatura ilia is a cold temperate butterfly known from the north part of Mt. Odae in Gangwon-do. The extent of occurrence (EOO) of the species is narrow. This species is found in valleys with deciduous broadleaf forests. The species is assessed as VU A1(a,d,e). Indiscriminate collection and quality deterioration of habitats caused by climate change may be threatening this species. There are currently no regional conservation measures.

VU

Aphantopus hyperantus (Linnaeus, 1758)

Lepidoptera: Nymphalidae

Aphantopus hyperantus is a butterfly known only from Mt. Halla in Jeju-do. The observed number of individuals has declined for last 5 years. This species is found in dry grasslands over 1,300 m above sea level. The species is assessed as VU A1(a,d). Climate change and loss of host plants caused by expansion of bamboos may be threatening this species. There are currently no regional conservation measures.

VU

Argynnis nerippe C. et R. Felder, 1862

Lepidoptera: Nymphalidae

Argynnis nerippe is a cold temperate butterfly that was previously known throughout Korea. However, in recent years this species has been only observed at several areas in Gangwon-do, Gyeonggi-do, and Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in grasslands. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

VU

Argynnis niobe (Linnaeus, 1758)

Lepidoptera: Nymphalidae

Argynnis niobe is a cold temperate butterfly that was previously known throughout Korea. However, in recent years this species has been observed at several areas in Gangwon-do, Gyeonggi-do, and Gyeongsangbuk-do and Mt. Halla in Jeju-do. This species is found in open grasslands. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Boloria oscarus (Eversmann, 1844)

Lepidoptera: Nymphalidae

Boloria oscarus is a cold temperate butterfly known from several areas in Gangwon-do, Gyeongsangbuk-do, and the north part of Mt. Jiri in Jeollanam-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in grasslands near deciduous broadleaf forests. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Boloria perryi (Butler, 1882)

Lepidoptera: Nymphalidae

Boloria perryi is a cold temperate butterfly known from several areas of Gangwon-do, Gyeonggi-do, Chungcheongbuk-do, and Gyeongsangbuk-do. This species is found in riverine grasslands. The species is assessed as VU A1(a,d). Loss of natural habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

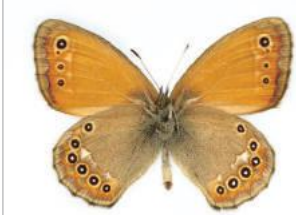
VU

Brenthis daphne (Bergsträser, 1780)

Lepidoptera: Nymphalidae

Brenthis daphne is a cold temperate butterfly that is known from several areas of Gangwon-do and Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is narrow. This species is found in grasslands near small streams. The species is assessed as VU A1(a,d). Loss of host plants and grassland habitats caused by afforestation, and climate change may be threatening this species. There are currently no regional conservation measures.

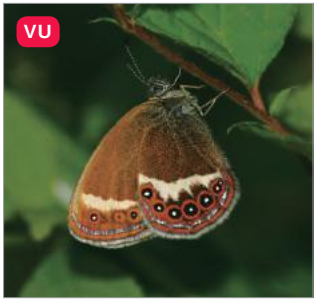
VU



Coenonympha amaryllis (Stoll, 1782)

Lepidoptera: Nymphalidae

Coenonympha amaryllis is a butterfly known from Gyeonggi-do. However, in recent years the species has been observed only at several areas of Gyeongsangbuk-do and Jeollanam-do. The number of populations is estimated to be fewer than 10 areas. This species is found in grasslands at the foot of mountains and coasts. The species is assessed as VU A1(a,d). Loss of natural habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.



Coenonympha hero (Linnaeus, 1761)

Lepidoptera: Nymphalidae

Coenonympha hero is a butterfly known throughout Korea. This species is found in sunny grasslands. The species is assessed as VU A1(a,d); B1ab(i). Loss of natural habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

Coenonympha oedippus (Fabricius, 1787)

Lepidoptera: Nymphalidae

Coenonympha oedippus is a butterfly known from several areas of Gyeonggi-do, Chungcheongbuk-do, Gyeongsangbuk-do, and Jeollabuk-do. The number of populations is estimated to be fewer than 10. This species is found in grasslands at the foot of mountains and arable lands. The species is assessed as VU A1(a,d). Loss of natural habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

Erebia cyclopius (Eversmann, 1844)

Lepidoptera: Nymphalidae

Erebia cyclopius is a cold temperate butterfly known from several areas of Gangwon-do and Gyeongsangbuk-do. This species is found in grasslands with deciduous broadleaf forests. The species is assessed as VU A1(a, d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

Erebia wanga Bremer, 1864

Lepidoptera: Nymphalidae

Erebia wanga is a cold temperate butterfly known from several areas of Gangwon-do, Gyeonggi-do, and Gyeongsangbuk-do. This species is found near deciduous broadleaf forests. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Euphydryas davidi (Oberthü, 1881)

Lepidoptera: Nymphalidae

Euphydryas davidi is a cold temperate butterfly known from several areas of Gyeonggi-do. However, in recent years this species has been observed only the Yeongwol area in Gangwon-do and Danyang area in Chungcheongbuk-do. The extent of occurrence (EOO) of the species is narrow. This species is found in shrubby grasslands. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Inachis io (Linnaeus, 1758)

Lepidoptera: Nymphalidae

Inachis io is a cold temperate butterfly known only from several areas of Gangwon-do. The extent of occurrence (EOO) of the species is very narrow. This species is found near deciduous broadleaf forests of tall mountains. The species is assessed as VU A1(a,d,e). Quality deterioration of habitats, indiscriminate collection, and climate change may be threatening this species. There are currently no regional conservation measures.

VU

Limenitis homeyeri Tancré 1881

Lepidoptera: Nymphalidae

Limenitis homeyeri is a butterfly known only from several areas of Gangwon-do. This species is found near deciduous broadleaf forests of tall mountains. The species is assessed as VU A1(a,d). Indiscriminate collection, climate change, and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Limenitis populi (Linnaeus, 1758)

Lepidoptera: Nymphalidae

Limenitis populi is a butterfly known only from Mt. Odae and Mt. Gyebang in Gangwon-do. The extent of occurrence (EOO) of the species is very narrow. This species is found in tall mountains. The species is assessed as VU A1(a,d). Indiscriminate collection, climate change, and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Melanargia halimede (Méériè, 1858)

Lepidoptera: Nymphalidae

Melanargia halimede is a butterfly known from the south coast and Jeju-do. This species is found in grasslands and lowland Chinese silver grasses. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Mimathyma nycteis (Méériè, 1859)

Lepidoptera: Nymphalidae

Mimathyma nycteis is a cold temperate butterfly known from the Yeongwol and Jeongseon areas in Gangwon-do and several areas of Chungcheongbuk-do. The extent of occurrence (EOO) of the species is very narrow. This species is found in shrubberies. The species is assessed as VU A1(a,d). Indiscriminate collection, climate change, and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Neptis tshetvericovi Kurentzov, 1936

Lepidoptera: Nymphalidae

Neptis tshetvericovi is a cold temperate butterfly known only from several areas of Gangwon-do and the extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in mongolian oak forests of tall mountains. The species is assessed as VU A1(a,d). Indiscriminate collection, climate change, and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Nymphalis antiopa (Linnaeus, 1758)

Lepidoptera: Nymphalidae

Nymphalis antiopa is a cold temperate butterfly known from several areas of Gangwon-do. The extent of occurrence (EOO) of the species is very narrow. This species is found in valleys of tall mountains. The species is assessed as VU A1(a,d,e). Climate change may be threatening this species. There are currently no regional conservation measures.

Nymphalis l-album (Esper, 1780)

Lepidoptera: Nymphalidae

Nymphalis l-album is a cold temperate butterfly known only from several areas of Gangwon-do. The extent of occurrence (EOO) of the species is very narrow. This species is found in valleys of tall mountains. The species is assessed as VU A1(a,d,e). Indiscriminate collection and climate change may be threatening this species. There are currently no regional conservation measures.

Nymphalis xanthomelas (Esper, 1781)

Lepidoptera: Nymphalidae

Nymphalis xanthomelas is a cold temperate butterfly that was previously known throughout Korea. However, in recent years this species has been observed at several areas in Gangwon-do and Gyeonggi-do. The extent of occurrence (EOO) of the species is estimated to be fewer than 10 areas. This species is found in valleys and on tall mountain ridges. The species is assessed as VU A1(a,d,e). Climate change may be threatening this species. There are currently no regional conservation measures.

Oeneis mongolica (Oberthü, 1876)

Lepidoptera: Nymphalidae

Oeneis mongolica is a cold temperate butterfly known from several areas in Gangwon-do, Gyeonggi-do, Gyeongsangbuk-do, and Gyeongsangnam-do. This species is found in highland grasslands. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

Oeneis urda (Eversmann, 1847)

Lepidoptera: Nymphalidae

Oeneis urda is a butterfly known from the Yangyang area in Gangwon-do and Mt. Halla in Jeju-do. This species is found in highland grasslands. The species is assessed as VU A1(a,d). Climate change and loss of grassland habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Parnassius bremeri Bremer, 1864

Lepidoptera: Papilionidae

Parnassius bremeri is a butterfly known from the Samcheok area in Gangwon-do, and several areas in Gyeongsangbuk-do and Gyeongsangnam-do. This species is found in rocky grasslands. The species is assessed as VU A1(a,d). Indiscriminate collection and loss of grassland habitats caused by afforestation may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

VU

Sericinus montela Gray, 1852

Lepidoptera: Papilionidae

Sericinus montela is a butterfly that was previously known throughout Korea. However, in recent years this species has been observed at several areas in Gangwon-do, Gyeonggi-do, Chungcheongbuk-do, Gyeongsangbuk-do, and Gyeongsangnam-do. This species is found in grasslands neighboring hillocks and rivers. The species is assessed as VU A1(a,d); B1ab(i). Loss of host plants and exposure to pesticides may be threatening this species. There are currently no regional conservation measures.

VU

Gonepteryx maxima Butler, 1885

Lepidoptera: Pieridae

Gonepteryx maxima is a butterfly that was previously known from the inlands throughout Korea. However, in recent years this species has been observed at several areas in Gangwon-do and Chungcheongbuk-do. This species is found near mountainous grasslands. The species is assessed as VU A1(a,d); D2. Climate change and loss of host plants caused by afforestation may be threatening this species. There are currently no regional conservation measures.

VU

Leptidea amurensis (Méériè, 1859)

Lepidoptera: Pieridae

Leptidea amurensis is a butterfly known only from the north part of Mt. Jiri in Gyeongsangnam-do. This species is found in grasslands near rivers and streams. The species is assessed as VU A1(a,d). Destruction of natural habitats caused by river refurbishment and facility construction may be threatening this species. There are currently no regional conservation measures.

VU

Boyeria maclachlani (Selys, 1883)

Odonata: Aeshnidae

Boyeria maclachlani is a large dragonfly known throughout Korea. The estimated number of individuals is very small. This species found at the upper reaches of streams with moderate-flowing water. The species is assessed as VU A2ac; B2ab(ii). Limited habitat range and destruction of natural habitats may be threatening this species. There are currently no regional conservation measures.

VU

Paracercion plagiosum (Needham, 1930)

Odonata: Coenagrionidae

Paracercion plagiosum is a rare damselfly known only from Mt. Jiri and Mt. Baegun in Jeollanam-do. The estimated number of individuals and populations are very small and its ecological features are not identified yet. The species found at lower stream reaches with rich aquatic plants, wetlands, and ponds. The species is assessed as VU B2ab(ii,iii). Reduction of natural habitats may be threatening this species. There are currently no regional conservation measures.

VU

Paracercion sieboldii (Selys, 1876)

Odonata: Coenagrionidae

Paracercion sieboldii is a rare damselfly that is regionally known throughout Korea. The estimated number of individuals and populations are very small and its ecological features are not identified yet. This species found at open ponds and wetlands with rich aquatic plants in mountainous and hilly areas. The species is assessed as VU A2ac; B2ab(ii,iii). Destruction of natural habitats caused by wetland reclamation and environment pollution may be threatening this species. There are currently no regional conservation measures.

VU

Asiagomphus coreanus (Doi & Okumura,1937)

Odonata: Gomphidae

Asiagomphus coreanus is a dragonfly regionally known from the Yeongwol area in Gangwon-do, Gwangneung and Yangpyeong areas in Gyeonggi-do and Uiseong area of Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is limited and the estimated number of individuals is very small. This species found at the middle and upper reaches of streams with fine sediment. The species is assessed as VU A2ac; B2ab(ii,iii). Destruction of natural habitats caused by urbanization, industrialization, and stream development projects may be threatening this species. There are currently no regional conservation measures.

VU

Asiagomphus melanopsoides (Doi, 1943)

Odonata: Gomphidae

Asiagomphus melanopsoides is a dragonfly endemic to Korea regionally known throughout Korea and the estimated number of individuals and populations are small. This species found at the middle and upper reaches of streams with fine sediment and the species is assessed as VU A2ac. Destruction of natural habitats may be threatening this species. There are currently no regional conservation measures.

VU

Nannophya pygmaea Rambur, 1842

Odonata: Libellulidae

Nannophya pygmaea is the smallest dragonfly in the world that is known throughout Korea. This species found at shallow wetlands in mountain areas and abandoned rice fields and the species is assessed as VU A3cd; B2ba(ii,iii). Destruction of natural habitats caused by urbanization, industrialization and landization of abandoned rice fields may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

VU

Scopura gaya Jin and Bae, 2005

Plecoptera: Scopuridae

Scopura gaya is a stonefly endemic to Korea known only from Mt. Gaya in Gyeongsangnam-do. The extent of occurrence (EOO) of the species is narrow and the estimated number of individuals is small. This species found in headwater streams of tall mountains over 1,000 m above sea level. The species is assessed as VU D2. Loss of natural habitats and climate change may be threatening this species. There are currently no regional conservation measures.

VU

Scopura jiri Jin and Bae, 2005

Plecoptera: Scopuridae

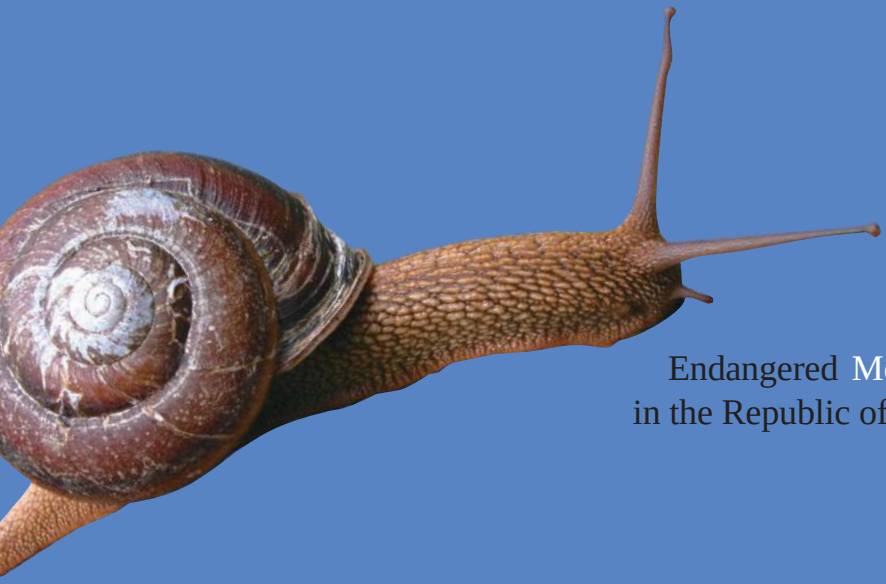
Scopura jiri is a stonefly endemic to Korea known only from Mt. Jiri and Mt. Baegun in Jeollanam-do. The extent of occurrence (EOO) of the species is very narrow. This species found in headwater streams of tall mountains at 780-1,300 m above sea level. The species is assessed as VU D2. Loss of natural habitats and climate change may be threatening this species. There are currently no regional conservation measures.

VU

Agrypnia pagetana Curtis, 1835

Trichoptera: Phryganeidae

Agrypnia pagetana is a rare caddisfly endemic to Korea known only from Mt. Jiri and Mt. Baegun in Jeollanam-do and the estimated number of individuals is very small. This species found in lakes and slow-flowing streams. The species is assessed as VU A2ac; B2ab(ii,iii). Loss of natural habitats may be threatening this species. There are currently no regional conservation measures.



2.6

Endangered Mollusks in the Republic of Korea

Lamprotula coreana (v. Martens, 1905)

Unionoida : Unionidae

Lamprotula coreana is a freshwater mussel endemic to Korea previously known from the Daedong, Han, and Geum Rivers. However, in recent years this species has been observed only in several drainages of the Geum River. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found at middle and upper sections in clear streams with fast flowing water. The species is assessed as CR A1(a,c); B2ab(iii). Illegal collection, reduction of host fish, change in natural habitats caused by decrease in water flows, and loss of natural habitats caused by dam and reservoir construction may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Karaftohelix adamsi (Kuroda and Hukuda, 1944)

Gastropoda: Bradybaenidae

Karaftohelix adamsi is a land snail endemic to Korea known frequently from Island Ulleung in Gyeongsangbuk-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found in bushy forests neighboring houses. The species is assessed as CR A1(a,c); B2ab(iii). Loss of natural habitats by expansion of arable lands and pesticide exposure may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Satsuma myomphala (Martens, 1865)

Gastropoda: Camaenidae

Satsuma myomphala is a land snail known only from Island Geoje in Gyeongsangnam-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow, and the living individual has been observed only once. This species is found in humid and bushy sub-tropical forests. The species is assessed as CR A1(a,c); B2ab(iii). Apart from predation by natural enemies, death due to people trampling, indiscriminate collection, and loss of natural habitats caused by development may be threatening this species. There are currently no regional conservation measures.

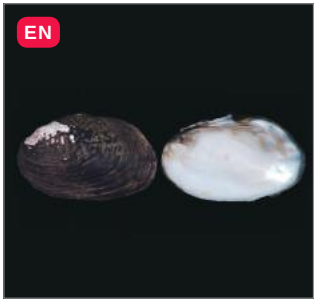
Mirus junensis Kwon and Lee, 1991

Gastropoda: Enidae

Mirus junensis is a land snail endemic to Korea known only from Mt. Duta in Gangwon-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found in forests with humid bushes and stone piles. The species is assessed as CR A1(a,c); B2ab(iii). Death due to people trampling, loss of natural habitats caused by development for tour, and road construction may be threatening this species. There are currently no regional conservation measures.

Inversiunio verrusosus Kondo, Yang and Choi, 2007
Unionoida: Unionidae

Inversiunio verrusosus is a freshwater mussel endemic to Korea that is known only from the Seomjin River. The extent of occurrence (EOO) is narrow and the number of individuals is declining in recent years. This species is found in streams with rock bottoms. The species is assessed as EN B1ab(iii). Apart from reduction of host fish, decrease in water flow and degradation of habitat quality caused by dam construction may be threatening this species. There are currently no regional conservation measures.



Lamprotula leai (Griffith and Pidgeon, 1834)
Unionoida: Unionidae

Lamprotula leai is a freshwater mussel endemic to Korea that is known from the Namhan, Geum and Seomjin Rivers. The extent of occurrence (EOO) is narrow and the number of individuals is declining in recent years. This species is found in deep and clear streams. The species is assessed as EN A1(a,c); B1ab(iii). Environmental change caused by dredging, water pollution, and dam construction may be threatening this species. There are currently no regional conservation measures.

Corbicula (Corbicula) fenouilliana Heude, 1883
Veneroida: Corbiculidae

Corbicula (Corbicula) fenouilliana is an Asian clam previously known from the Han and Geum Rivers. However, in recent years this species has been observed only at lower section of the Han River. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. The natural habitats and the number of individuals are declining in recent years. This species is found in brackish water zones under ocean influence. The species is assessed as EN A1(a,c); B1ab(i). Blocking of the seawater caused by dam construction may be threatening this species. There are currently no regional conservation measures.

Koreanohadra koreana (Pfeiffer, 1846)
Gastropoda: Bradybaenidae

Koreanohadra koreana is a land snail endemic to Korea that is known only from Hong Island of Jeollanam-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found near hillocks and houses, and on stone walls. The species is assessed as EN A1(a,c); B2ab(iii). Illegal collection, death due to people trampling in the rainy season, loss of natural habitats caused by arable land development, and pesticide exposure may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Euphaedusa aculus mokpoensis (Pilsbry and Hirase, 1908)

Gastropoda: Clausiliidae

Euphaedusa aculus mokpoensis is a land snail endemic to Korea that is known from the Mokpo area and Heuksan Island of Jeollanam-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found under dead woods and between shrubs neighboring arable lands. The species is assessed as EN A1(a,c); B2ab(iii). Loss of natural habitats caused by afforestation and development of arable lands may be threatening this species. There are currently no regional conservation measures.

Euphaedusa fusaniana uturyotoensis Kuroda and Hukuda, 1944

Gastropoda: Clausiliidae

Euphaedusa fusaniana uturyotoensis is a land snail endemic to Korea that is known only from Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found under leaf litter and between stone piles in forests. The species is assessed as EN A1(a,c); B2ab(ii). Loss of natural habitats caused by afforestation and development of arable lands may be threatening this species. There are currently no regional conservation measures.

Paganizaptyx miyanagai (Kuroda, 1936)

Gastropoda: Clausiliidae

Paganizaptyx miyanagai is a land snail endemic to Korea that is known from Mt. Soyo in Gyeonggi-do and Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found near dead woods and under small stones in humid forests. The species is assessed as EN A1(a,c); B2ab(ii). Loss of natural habitats caused by afforestation and development of arable lands may be threatening this species. There are currently no regional conservation measures.

Paganizaptyx miyanagai ullundoensis Kwon and Lee, 1991

Gastropoda: Clausiliidae

Paganizaptyx miyanagai ullundoensis is a land snail endemic to Korea that is known only from Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found near dead woods and under small stones in humid forests. The species is assessed as EN A1(a,c); B2ab(ii). Loss of natural habitats caused by afforestation and development of arable lands may be threatening this species. There are currently no regional conservation measures.

Reinia variegata (A. Adams, 1868)

Gastropoda: Clausiliidae

Reinia variegata is a land snail known only from Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found under leaf litter and between stone piles in broadleaf forests. The species is assessed as EN A1(a,c); B2ab(ii). Loss of natural habitats caused by afforestation and development of arable lands may be threatening this species. There are currently no regional conservation measures.

Nobuea elegantistriata Kuroda and Miyanaga, 1943

Gastropoda: Cyclophoridae

Nobuea elegantistriata is a tropical land snail endemic to Korea that is known only from Geomun Island of Jeollanam-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found between stone piles in moderately dry forests. The species is assessed as EN A1(a,c); B2ab(iii). Apart from the small number of individuals, loss of natural habitats caused by afforestation, development of arable lands, and pesticide exposure may be threatening this species. There are currently no regional conservation measures.

Arinia chejuensis Kwon and Lee, 1991

Gastropoda: Diplommatinidae

Arinia chejuensis is a tropical land snail endemic to Korea that is known only from Jeju-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found between leaf litter or stones in conserved broadleaf forests. The species is assessed as EN A1(a,c); B2ab(iii). Loss of natural habitats caused by road construction, afforestation, and development of arable lands may be threatening this species. There are currently no regional conservation measures.

Discus elatior (A. Adams, 1858)

Gastropoda: Discidae

Discus elatior is a land snail endemic to Korea that is known from Mt. Taebaek and the Cheorwon area in Gangwon-do and Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is very narrow and the number of individuals is declining in recent years. This species is found under bushes and between stone piles in forests. The species is assessed as EN A1(a,c); B2ab(ii). Change and loss of natural habitats caused by afforestation and road construction may be threatening this species. There are currently no regional conservation measures.

Koreanomelania nodifila (v. Martens, 1886)

Gastropoda: Pleuroceridae

Koreanomelania nodifila is a freshwater snail endemic to Korea that is known only from streams in Gangwon-do, Gyeonggi-do, and Chungcheongbuk-do. The extent of occurrence (EOO) is narrow and the number of individuals is declining in recent years. This species is found in deep and clear streams. The species is assessed as EN A1(a,d); B2ab(iii,iv). Illegal collection for edible use, loss of natural habitats caused by water pollution, and dam construction may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Punctum dageletense Kuroda and Hukuda, 1944

Gastropoda: Punctidae

Punctum dageletense is a land snail endemic to Korea that is known only from Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is very narrow and the number of individuals is rapidly declining. This species is found under leaf litter and stones in forests. The species is assessed as EN A1(a,c); B2ab(ii). Loss of natural habitats caused by afforestation and road construction may be threatening this species. There are currently no regional conservation measures.

Punctum depressum Kuroda and Hukuda, 1944

Gastropoda: Punctidae

Punctum depressum is a tropical land snail endemic to Korea that is known only from Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is very narrow and the number of individuals is rapidly declining. This species is found under leaf litter and under stones near arable lands and roads. The species is assessed as EN A1(a,c); B2ab(ii). Loss of natural habitats caused by afforestation and road construction may be threatening this species. There are currently no regional conservation measures.

Sinoennea iwakawa (Pilsbry, 1900)

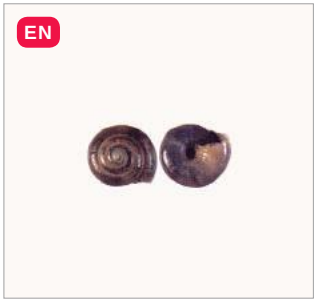
Gastropoda: Streptaxidae

Sinoennea iwakawa is a tropical land snail known only from Jeju-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found under leaf litter and between stone piles in forests. The species is assessed as EN A1(a,c); B2ab(ii). Loss of natural habitats by development for tour may be threatening this species. There are currently no regional conservation measures.

Cipangopaludina japonica (v. Martens, 1860)

Gastropoda: Viviparidae

Cipangopaludina japonica is a freshwater snail known only from the Gimhae area in Gyeongsangnam-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found in wetlands, swamps and reservoirs. The species is assessed as EN B1ab(iii). Apart from the small number of individuals and interspecific competition with *Pomacea canaliculata*, pesticide exposure and reclamation of natural habitats may be threatening this species. There are currently no regional conservation measures.



Retinella radiatula coreana Kwon and Lee, 1991

Gastropoda: Zonitidae

Retinella radiatula coreana is a large land snail that is known only from Mt. Gyeryong in Chungcheongnam-do and Mt. Sobaek in Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is very narrow. This species is found under dry leaf litter in hillocks. The species is assessed as EN A1(a,c); B2ab(ii). Change and loss of natural habitats caused by afforestation may be threatening this species. There are currently no regional conservation measures.

Retinella radiatula radiatula (Pilsbry and Hirase, 1904)

Gastropoda: Zonitidae

Retinella radiatula radiatula is a land snail known only from Mt. Gyeryong in Chungcheongnam-do. The extent of occurrence (EOO) of the species is very narrow. This species is found under dry leaf litter in hillock. The species is assessed as EN A1(a,c); B2ab(ii). Apart from the small numbers of populations and individuals, change and loss of natural habitats by afforestation, and road construction may be threatening this species. There are currently no regional conservation measures.

Anodonta (*Anemina*) *arcaeformis flavotincta* (v. Martens, 1905)

Unionoida: Unionidae

Anodonta (*Anemina*) *arcaeformis flavotincta* is a freshwater mussel endemic to Korea that is known throughout Korea. The area of occupancy (AOO) of the species is reducing and the number of individuals is declining in recent years. This species is found on sandy and muddy stream bottoms with slow flowing water. The species is assessed as VU A1(a,c); B2ab(iii). Water pollution, decrease of host fish, reduction of water quantity, and change of bottom condition may be threatening this species. There are currently no regional conservation measures.

Cristaria plicata (Leach, 1815)

Unionoida: Unionidae

Cristaria plicata is a freshwater mussel known at the middle and lower sections of the Nakdong River, Asan Lake in Chungcheongnam-do and Goesan Lake in Chunngcheogbuk-do. The number of individuals is declining in recent years. This species is found on sandy, muddy and rocky bottoms in streams. The species is assessed as VU A1(a,c); B2ab(iii). Indiscriminate collection, decrease of host fish, and loss of natural habitats caused by river development may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Lanceolaria grayana (Lea, 1834)

Unionoida: Unionidae

Lanceolaria grayana is a freshwater mussel known from several drainages of the Namhan, Nakdong and Geum Rivers. The area of occupancy (AOO) of the species is reducing and the number of individuals is declining in recent years. This species is found on gravelly and sandy bottoms with fast flowing water and deep depth. The species is assessed as VU A1(a,d); B2ab(ii,iii). Indiscriminate collection, decrease of host fish, and change of bottom condition may be threatening this species. There are currently no regional conservation measures.

Solenaia triangularis (Heude, 1885)

Unionoida: Unionidae

Solenaia triangularis is a freshwater mussel known from the several drainages of the Namhan, Bukhan, Seomjin, and Geum Rivers. The natural habitats and the number of individuals are declining in recent years. This species is found on gravelly and sandy stream bottoms with fast flowing water. The species is assessed as VU A1(a,d); B2ab(ii,iii). Water pollution, decrease of host fish, and change of natural habitats may be threatening this species. There are currently no regional conservation measures.

Corbicula (Corbicula) colorata (v. Martens, 1905)

Veneroida: Corbiculidae

Corbicula (Corbicula) colorata is an Asian clam endemic to Korea that was previously known throughout Korea. However, in recent years this species has been observed only at the Taehwa River in Ulsan. The area of occupancy (AOO) of the species is small and the number of individuals is declining in recent years. This species is found on sandy bottoms of the middle and upper sections in rivers. The species is assessed as VU B2ab(iii). Water pollution and change of natural habitats caused by river refurbishment may be threatening this species. There are currently no regional conservation measures.

Corbicula (*Corbiculina*) *papyracea* Heude, 1883

Veneroida: Corbiculidae

Corbicula (*Corbiculina*) *papyracea* is an Asian clam endemic to Korea that was previously known throughout Korea. However, in recent years this species has been observed mainly from the Bukhan and Geum Rivers. The area of occupancy (AOO) of the species is narrow and the natural habitats are declining in recent years. The estimated population size is small and the number of individuals is declining in recent years. This species is found on sandy bottoms of the middle and upper sections in rivers. The species is assessed as VU A1(a,c); B2ab(iii). Water pollution and change of natural habitats caused by river refurbishment may be threatening this species. There are currently no regional conservation measures.

Pisidium (*Neopisidium*) *coreanum* Kwon, 1991

Veneroida: Sphaeriidae

Pisidium (*Neopisidium*) *coreanum* is freshwater clam endemic to Korea that is known from the Chuncheon area in Gangwon-do, Mt. Naejang in Jeollabuk-do and Mt. Daeam in Gangwon-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are narrow. The natural habitats and the number of individuals are declining in recent years. This species is found in mountainous wetlands and spring waters with sandy and muddy bottoms. The species is assessed as VU A1(a,d); B2ab(iii,v). Indiscriminate collection, forest development, and drying wetlands may be threatening this species. There are currently no regional conservation measures.

Meretrix lamarckii Gray, 1853

Veneroida: Veneridae

Meretrix lamarckii is a saltwater clam previously known from Incheon and the Nakdong River. However, in recent years the species has been observed at the Taean area in Chungcheongnam-do, and Namhae and Geoje Islands of Gyeongsangnam-do. The area of occupancy (AOO) of the species is reducing and natural habitats are declining in recent years. The number of populations and individuals are declining in recent years. This species is found at sandy coasts. The species is assessed as VU A1(a,d); B2ab(iii,v). Indiscriminate collection and change of natural habitats caused by coast reclamation may be threatening this species. There are currently no regional conservation measures.

Meretrix lusoria (Röing, 1798)

Veneroida: Veneridae

Meretrix lusoria is a saltwater clam known near the cost of Gyeongsangnam-do and Jeollanam-do. The area of occupancy (AOO) of the species is reducing and natural habitats are declining in recent years. The number of populations and individuals are declining in recent years. This species is found inside of bay with fresh water. The species is assessed as VU A1(a,d); B2ab(iii,v). Indiscriminate collection and change of natural habitats caused by cost reclamation may be threatening this species. There are currently no regional conservation measures.

Zoogenetes harpa (Say, 1824)

Gastropoda: Acanthinulidae

Zoogenetes harpa is a land snail known only from Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) is narrow. This species is found between rock creeks and corroded branches in forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Chamalycaeus kurodai (Pilsbry and Hirase, 1908)

Gastropoda: Alycaeidae

Chamalycaeus kurodai is a tropical land snail endemic to Korea that is known from the south coast, Mt. Naejang in Jeollabuk-do, and Jeju-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are narrow. The number of individuals is declining in recent years. This species is found between stones with rich lime in dry areas. The species is assessed as VU B2b(i,ii). Change of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Aegista (*Aegista*) *chejuensis* (Pilsbry and Hirase, 1908)

Gastropoda: Bradybaenidae

Aegista (*Aegista*) *chejuensis* is a land snail endemic to Korea that is known from the southern island area including Jin Island of Jeollanam-do and Jeju-do. The extent of occurrence (EOO) of the species is narrow, and natural habitats and the number of individuals are declining in recent years. This species is found under shrubs and between stone piles in forests. The species is assessed as VU B2ab(ii). Apart from predation by natural enemies, change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Aegista (*Aegista*) *gottschei fusanica* (Pilsbry, 1926)

Gastropoda: Bradybaenidae

Aegista (*Aegista*) *gottschei fusanica* is a land snail endemic to Korea that is known from Gaui Island of Chungcheongnam-do, Geomun Island of Jeollanam-do, and Busan. The extent of occurrence (EOO) of the species is narrow, and natural habitats and the number of individuals are declining in recent years. The estimated population size is small. This species is found under leaf litter and near stone piles in dry forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Aegista (*Aegista*) *proxima* (Pilsbry and Hirase, 1909)

Gastropoda: Bradybaenidae

Aegista (*Aegista*) *proxima* is a land snail endemic to Korea that is known from the Samcheok area in Gangwon-do, Geoje Island of Gyeongsangnam-do and Yeosu area in Jeollanam-do. The extent of occurrence (EOO) of the species is narrow and the area of occupancy (AOO) of the species is reducing. The number of populations and individuals are declining in recent years. This species is found under rotten leaf litter and between stone piles in dry forests. The species is assessed as VU A1(a,c); B2ab(iii). Apart from predation by natural enemies, change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Aegista (*Aegista*) *pyramidata* (Pilsbry, 1926)

Gastropoda: Bradybaenidae

Aegista (*Aegista*) *pyramidata* is a land snail endemic to Korea that is known from the north part of Gangwon-do. The area of occupancy (AOO) of the species is reducing, and the number of populations and individuals are declining in recent year. This species is found near rotten leaf litter and branches in conserved forests. The species is assessed as VU A1(a,c); B2ab(iii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Aegista (*Aegista*) *pyramidata hebes* (Pilsbry, 1926)

Gastropoda: Bradybaenidae

Aegista (*Aegista*) *pyramidata hebes* is a medium and small sized land snail known from the north part of Gangwon-do and Deokjeok Island of Incheon. The area of occupancy (AOO) of the species is reducing and the estimated population size is small. The number of individuals is declining in recent years. This species is found near rotten leaf litter and branches in conserved forests. The species is assessed as VU A1(a,c); B2ab(iii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Aegista (*Aegista*) *tenuissima* (Pilsbry and Hirase, 1908)

Gastropoda: Bradybaenidae

Aegista (*Aegista*) *tenuissima* is a medium land snail known from Gangwon-do, Ganghwa Island of Incheon and Busan. The area of occupancy (AOO) of the species is reducing, and the number of populations and individuals are declining in recent years. This species is found under leaf litter and near stone piles in dry forests. The species is assessed as VU A1(a,c); B2ab(iii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Aegista (*Plectotropis*) *diversa* Kuroda, 1936

Gastropoda: Bradybaenidae

Aegista (*Plectotropis*) *diversa* is a land snail endemic to Korea that is known from the north central areas of Gangwon-do and Mt. Soyo in Gyeonggi-do. The area of occupancy (AOO) of the species is reducing, and the number of populations and individuals are declining in recent years. This species is found under leaf litter and stone piles in humid forests. The species is assessed as VU A1(a,c); B2ab(iii). Apart from predation by natural enemies, change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Chosenelix problematica (Pilsbry, 1926)

Gastropoda: Bradybaenidae

Chosenelix problematica is a land snail endemic to Korea that is known throughout Korea. The area of occupancy (AOO) of the species is reducing, and the number of populations and individuals are declining in recent years. This species is found under leaf litter and between branches in shrubberies. The species is assessed as VU A1(a,c); B2ab(iii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Euhadra dixoni (Pilsbry, 1900)

Gastropoda: Bradybaenidae

Euhadra dixoni is a large land snail known from Mt. Naejang in Jeollabuk-do and Jeju-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are narrow, and the natural habitats are declining in recent years. The estimated population size is very small and the number of individuals is declining in recent years. This species is found on trees in conserved forests. The species is assessed as VU B2ab(ii). Apart from predation by natural enemies, indiscriminate collection for ornamental use, change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Euhadra herklotsi (v. Martens, 1860)

Gastropoda: Bradybaenidae

Euhadra herklotsi is a large land snail known from island areas of Gyeongsangnam-do, Jeju-do, and the south coast. The area of occupancy (AOO) of the species is reducing and the natural habitats are declining in recent years. The number of populations and individuals are declining. This species is found at humid areas in broadleaf forests with shrubs. The species is assessed as VU A1(a,c); B2ab(iii). Apart from predation by natural enemies, indiscriminate collection for ornamental use, change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Koreanohadra kurodana (Pilsbry, 1926)

Gastropoda: Bradybaenidae

Koreanohadra kurodana is a land snail known from Gangwon-do and Gyeonggi-do. The area of occupancy (AOO) of the species is reducing, and the number of populations and individuals are declining in recent years. This species is found at humid areas in broadleaf forests with shrubs. The species is assessed as VU B2ab(ii). Apart from predation by natural enemies, indiscriminate collection for ornamental use, change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Lepidopisum verrucosum (Reinhardt, 1877)

Gastropoda: Bradybaenidae

Lepidopisum verrucosum is a small land snail known from Gangwon-do, Chunngcheogbuk-do and Gyeongsangbuk-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are reducing, and the number of populations and individuals are declining in recent years. This species is found at soil with rich lime. The species is assessed as VU A1(a,c); B2ab(iii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Nesiohelix samarangae Kuroda and Miyanaga, 1943

Gastropoda: Bradybaenidae

Nesiohelix samarangae is a land snail endemic to Korea that is known throughout Korea. The number of populations and individuals are declining in recent years. This species is found on rocks, at plentiful leaf litter areas, and between stone piles in conserved areas. The species is assessed as VU B2ab(ii). Apart from predation by natural enemies, indiscriminate collection, change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Trishoplita ottoi Pilsbry, 1926

Gastropoda: Bradybaenidae

Trishoplita ottoi is a land snail endemic to Korea that is known from Gangwon-do, Gyeongsangbuk-do, Gyeongsangnam-do and Jeollanam-do. The area of occupancy (AOO) of the species is reducing, and the number of populations and individuals are declining in recent years. This species is found under leaf litter and between branches in shrubberies. The species is assessed as VU A1(a,c); B2ab(iii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Cochlicopa lubrica (Müler, 1774)

Gastropoda: Cionellidae

Cochlicopa lubrica is a land snail known from the north central areas in Gangwon-do and Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) is narrow and the number of individuals is declining in recent years. This species is found under leaf litter and between stones in conserved forests. The species is assessed as VU A1(a,c); B2ab(i,iii). Change of natural habitats caused by temperature rise and forest development may be threatening this species. There are currently no regional conservation measures.

Cyclophorus herklotsi v. Martens, 1861

Gastropoda: Cyclophoridae

Cyclophorus herklotsi is a tropical land snail known from the southern areas including Jeollanam-do and Jeju-do. The extent of occurrence (EOO) is narrow. The natural habitats, the number of populations, and individuals are declining in recent years. The northern distribution limit line of this species is Mt. Naejang in Jeollabuk-do. This species is found between leaf litter and small stones in warm temperate forests. The species is assessed as VU A1(a,c); B2ab(ii). Change of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Cyclotus (*Procyclotus*) *campanulatus* v. Martens, 1865

Gastropoda: Cyclophoridae

Cyclotus (*Procyclotus*) *campanulatus* is a tropical land snail known from the southern areas and Jeju-do. The northern distribution limit line of this species is Mt. Naejang in Jeollabuk-do. The extent of occurrence (EOO) is narrow. The natural habitats and the number of populations, and individuals are declining in recent years. This species is found under leaf litter and small stones under shrubs in conserved warm temperate forests. The species is assessed as VU A1(a,c); B2ab(ii). Change of natural habitats by forest development may be threatening this species. There are currently no regional conservation measures.

Nakadaella micron (Pilsbry, 1900)

Gastropoda: Cyclophoridae

Nakadaella micron is a tropical land snail known from the westsouthern islands and Jeju-do. The northern distribution limit line of this species is Mt. Naejang in Jeollabuk-do. The number of populations and individuals are declining in recent years. This species is found under leaf litter and small stones in forests. The species is assessed as VU A1(a,c); B2ab(ii). Change of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Platyraphe minutus quelpartensis (Pilsbry and Hirase, 1908)

Gastropoda: Cyclophoridae

Platyraphe minutus quelpartensis is a tropical land snail endemic to Korea that is known from the westsouthern islands and Jeju-do. The extent of occurrence (EOO) is narrow. The number of populations and individuals are declining. This species is found under leaf litter and small stones under shrubs in conserved warm temperate forests. The species is assessed as VU A1(a,c); B2ab(ii). Change of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Diplommatina (*Sinica*) *kyobuntoensis* Kuroda and Miyanaga, 1943

Gastropoda: Diplommatinidae

Diplommatina (*Sinica*) *kyobuntoensis* is a land snail endemic to Korea known only from Geomun Island of Jeollanam-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are narrow. The number of individuals is declining in recent years. This species is found between stone piles and under leaf litter in shrubberies. The species is assessed as VU B2b(i,ii). Change of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Diplommatina chejuensis Kwon and Lee, 1991

Gastropoda: Diplommatinidae

Diplommatina chejuensis is a land snail endemic to Korea that is known only from Mt. Naejang of Jeollabuk-do and Jeju-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are narrow. The number of individuals is declining in recent years. This species is found between stone piles and under leaf litter in humid forests. The species is assessed as VU B2b(i,ii). Change of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Discus pauper (Gould, 1859)

Gastropoda: Discidae

Discus pauper is a land snail known from Mt. Seorak and the Cheorwon area in Gangwon-do, and Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is narrow, and natural habitats and the number of individuals are declining in recent years. This species is found between small stones in dry forests in limestone landscapes. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Ellobium chinense (Pfeiffer, 1954)

Gastropoda: Ellobiidae

Ellobium chinense is a land snail known from salt marshes along the west south coast. The natural habitats, the number of populations and individuals are declining in recent years. This species is found between stones in fresh water tidelands near shoreline and halophytes like *Zoysia sinica*. The species is assessed as VU A1(a,c); B2ab(ii). Change of natural habitats caused by coast development, tideland reclamation, and destruction of salt marshes may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Tugalina (*Scelidotoma*) *vadososinuata hoonsooi* Choe, Yoon and Habe, 1992

Gastropoda: Fissurellidae

Tugalina (*Scelidotoma*) *vadososinuata hoonsooi* is a limpet known from Oeyeonyeol and Hwoenggyeon Islands of Chungcheongnam-do, and Ui Island of Jeollanam-do. The extent of occurrence (EOO) is fragmented and the number of populations is declining in recent years. This species is found at rocky areas with plentiful brown algae and 30 m of depth away from the intertidal zone. The species is assessed as VU A1(d); B2ab(i,v). Change of marine environment may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Gastrocopta (*Sinalbinula*) *jinjiroi* Kuroda and Hukuda, 1944

Gastropoda: Gastrocoptidae

Gastrocopta (*Sinalbinula*) *jinjiroi* is a land snail endemic to Korea that is known only from Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) is narrow. This species is found between stones in dry and barren areas. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Nordotis gigantea Gmelin, 1971

Gastropoda: Haliotidae

Nordotis gigantea is an ear shell known only from the coasts of Jeju-do. The extent of occurrence (EOO) is narrow. The natural habitats, and the number of populations and individuals are declining in recent years. This species is found at oceanic rocky areas with plentiful brown algae and 30 m of depth away from the intertidal zone. The species is assessed as VU A1(d); B2ab(i,v). Indiscriminate collection and change of marine environment may be threatening this species. There are currently no regional conservation measures.

Nordotis madaka Habe, 1979

Gastropoda: Haliotidae

Nordotis madaka is a large tropical ear shell known from the coasts of Dok Island of Gyeongsangbuk-do and Jeju-do. The extent of occurrence (EOO) is narrow. The natural habitats and the number of individuals are declining in recent years. This species is found at rockbed zones in streams with 10-50 m of depth. The species is assessed as VU A1(d); B2ab(i,v). Indiscriminate collection and change of natural habitats may be threatening this species. There are currently no regional conservation measures.

Bekkochlamys quelpartensis (Pilsbry and Hirase, 1908)

Gastropoda: Helixarionidae

Bekkochlamys quelpartensis is a large land snail endemic to Korea that is known only from Jeju-do. The extent of occurrence (EOO) of the species is narrow and the number of individuals is declining in recent years. This species is found under shrubs and near stone piles in forests. The species is assessed as VU B2ab(ii). Apart from predation by natural enemies, change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Macrochlamys fusanus Hirase, 1908

Gastropoda: Helixarionidae

Macrochlamys fusanus is a small land snail endemic to Korea that is known from Geomun Island of Jeollanam-do, Jeju-do, and Busan. The extent of occurrence (EOO) of the species is narrow and the number of individuals is declining in recent years. This species is found under leaf litter and near stone piles in dry forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Macrochlamys hypostilbe Pilsbry and Hirase, 1909

Gastropoda: Helixarionidae

Macrochlamys hypostilbe is a land snail endemic to Korea that is known from Geomun Island of Jeollanam-do, Jeju-do, and Busan. The extent of occurrence (EOO) of the species is narrow. The natural habitats and the number of individuals are declining in recent years. This species is found under leaf litter and between stone piles in dry forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Parakaliella fusanianar (Pilsbry and Hirase, 1909)

Gastropoda: Helixarionidae

Parakaliella fusanianar is a land snail endemic to Korea that is known from Geoje Island of Gyeongsangnam-do and Busan. The extent of occurrence (EOO) of the species is narrow and the area of occupancy (AOO) of the species is reducing. The number of individuals is declining in recent years. This species is found on leaves and stalks in conserved forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Parakaliella obesiconus (Pilsbry and Hirase, 1909)

Gastropoda: Helixarionidae

Parakaliella obesiconus is a land snail endemic to Korea that is known from Mt. Samyeong and Chuncheon in Gangwon-do and Geoje Island of Gyeongsangnam-do. The area of occupancy (AOO) of the species is reducing and the population size is small. This species is found on leaves, stalks and leaf litter in conserved forests. The species is assessed as VU A1(a,c); B2ab(iii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Parasitala miyanagai Kuroda and Hukuda, 1944

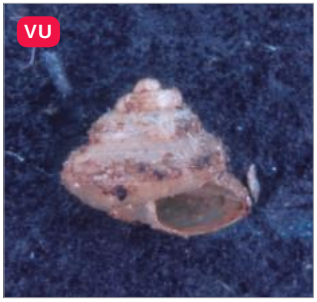
Gastropoda: Helixarionidae

Parasitala miyanagai is a land snail known only from Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) of the species is narrow and the number of individuals is declining in recent years. This species is found under stones and leaf litter in humid and thick forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Sitalina chejuensis Kwon and Lee, 1991

Gastropoda: Helixarionidae

Sitalina chejuensis is a land snail endemic to Korea that is known from only Geumsan in Jeju-do. The extent of occurrence (EOO) of the species is narrow and the area of occupancy (AOO) of the species is reducing. The number of individuals is declining in recent years. This species is found under stones and leaf litter in humid and thick forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.



Sitalina circumcincta (Reinhardt, 1883)

Gastropoda: Helixarionidae

Sitalina circumcincta is a tropical land snail known only from the Geumsan area in Jeju-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are narrow. The number of individuals is declining in recent years. This species is found under stones and leaf litter in humid and thick forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Sitalina japonica Habe, 1964

Gastropoda: Helixarionidae

Sitalina japonica is a tropical land snail previously known from Geomun Island of Jeollanam-do. However, in recent years the species has been observed only at the Geumsan area in Jeju-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are narrow. The number of individuals is declining in recent years. This species is found under stones and leaf litter in humid and thick forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Yamatochlamys lampra (Pilsbry and Hirase, 1904)

Gastropoda: Helixarionidae

Yamatochlamys lampra is a land snail known from Geoje Island of Gyeongsangnam-do, Geomun Island of Jeollanam-do, and Jeju-do. The extent of occurrence (EOO) of the species is narrow and the number of individuals is rapidly declining in recent years. This species is found under stones and leaf litter, and on branches in forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Clithon retropictus (v. Martens, 1879)

Gastropoda: Neritidae

Clithon retropictus is a saltwater or freshwater snail known only from Jeollanam-do and Jeju-do. The extent of occurrence (EOO) and the area of occupancy (AOO) of the species are very narrow. This species is found at brackish water zones with gravelly bottom and fast flowing water. The species is assessed as VU A1(a,c); B2ab(iii). Change of natural habitats and blocking of the seawater caused by dam construction may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Koreoleptoxis globus ovalis Burch and Jung, 1987

Gastropoda: Pleuroceridae

Koreoleptoxis globus ovalis is a freshwater snail endemic to Korea that is known from streams in Gangwon-do, Gyeonggi-do, and Chungcheongbuk-do. The extent of occurrence (EOO) is reducing. The natural habitats and the number of individuals are declining in recent years. This species is found in upper section of deep streams with fast flowing water. The species is assessed as VU A1(a,d); B2ab(iii). Indiscriminate collection for edible use, change of natural habitats caused by dam construction, and water pollution may be threatening this species. There are currently no regional conservation measures.

Charonia lampas sauliae (Reeve, 1844)

Gastropoda: Ranellidae

Charonia lampas sauliae is the largest triton shell in Korea that is known from the south coast and Jeju-do. In recent years, the extent of occurrence (EOO) is reducing and the number of populations is declining. This species is found at rocky areas with sands and gravels with 20-30 m of depth away from the intertidal zone. The species is assessed as VU A1(d); B2ab(i,v). Illegal collection for ornamental and edible use and change of marine environment may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Spirostoma japonicum japonicum (A. Adams, 1867)

Gastropoda: Spirostomatidae

Spirostoma japonicum japonicum is a tropical land snail known from the southern islands including Jin and Heuksan Islands of Jeollanam-do, and Jeju-do. The number of populations and individuals are declining in recent years. This species is found under leaf litter in conserved forests. The species is assessed as VU A1(a,c); B2ab(ii). Change of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Strobilops (*Eostrobilops*) *coreana* (Pilsbry, 1926)

Gastropoda: Strobilopsidae

Strobilops (*Eostrobilops*) *coreana* is a land snail endemic to Korea that is known only from the Cheorwon area in Gangwon-do and Danyang area in Chungcheongbuk-do. The extent of occurrence (EOO) is narrow and the estimated population size is small. This species is found under leaf litter and between rotten branches in forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Strobilops (*Eostrobilops*) *hirasei* (Pilsbry, 1908)

Gastropoda: Strobilopsidae

Strobilops (*Eostrobilops*) *hirasei* is a land snail endemic to Korea that is known only from Jeju-do. The extent of occurrence (EOO) is narrow. This species is found under leaf litter and between rotten branches in forests. The species is assessed as VU B2ab(ii). Change and loss of natural habitats caused by forest development and expansion of arable lands may be threatening this species. There are currently no regional conservation measures.

Columella edentula (Draparnaud, 1805)

Gastropoda: Vertiginidae

Columella edentula is a land snail known from the north central areas in Gangwon-do and Ulleung Island of Gyeongsangbuk-do. The extent of occurrence (EOO) is narrow. The natural habitats and the number of individuals are declining in recent years. This species is found on rotten leaf litter and between stones of forests in limestone landscapes. The species is assessed as VU A1(a,c); B2ab(iii). Change and loss of natural habitats caused by forest development may be threatening this species. There are currently no regional conservation measures.

Sinotaia quadrata (Benson, 1842)

Gastropoda: Viviparidae

Sinotaia quadrata is a freshwater snail known only from the Geumpung Reservoir in Jellabuk-do. The extent of occurrence (EOO) is limited in only a single area. This species is found on muddy bottoms with 20-30 cm of depth in reservoirs or swamps. The species is assessed as VU B2bc(ii,v). Indiscriminate collection, change of natural habitats, and water pollution may be threatening this species. There are currently no regional conservation measures.

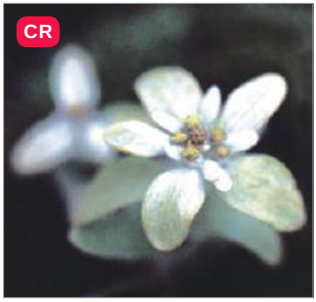
Fissidentalium (*Pictodentalium*) *vernedei* (Sowerby, 1860)

Dentaliida: Dentaliidae

Fissidentalium (*Pictodentalium*) *vernedei* is a tusk shell known from the south west cost including Jeju-do and Jin-do in Jeollanam-do. The area of occupancy (AOO) of the species is fragmented and reducing. The number of individuals is declining in recent years. This species is found on sandy and muddy bottoms with 10-30 cm of depth. The species is assessed as VU B2ab(ii). Indiscriminate collection for ornamental use and change of natural habitats caused by coast reclamation may be threatening this species. There are currently no regional conservation measures.

2.7

Endangered Vascular plants in the Republic of Korea



Leontopodium hallaisanense Handel-Mazzetti

Asterales: Asteraceae

Leontopodium hallaisanense is a perennial herb endemic to Korea that about 30 individuals grow only at the peak of Mt. Halla in Jeju-do. This species is found on cliffs of mountain slopes and in grasslands of tall mountains. The species is assessed as CR B2ab(iii,v); C2a(i); D1. Collapse of natural habitats and illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Codonopsis minima Nakai

Asterales: Campanulaceae

Codonopsis minima is a perennial vine plant that grow only at Mt. Halla in Jeju-do. The number of individuals and natural habitats are very small. This species is found sparsely in *Abies koreana* forests at 1,100-1,600 m above sea level. The species is assessed as CR B2ab(v). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Silene fasciculata Nakai

Caryophyllales: Caryophyllaceae

Silene fasciculata is a perennial herb endemic to Korea that grows only at the peak of Mt. Halla in Jeju-do. This species is found in stony areas near mountain peaks. The species is assessed as CR B2ab(iii, v); C2a(i); D1. Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Arabis serrata Franchet var. *hallaisanensis* (Nakai) Ohwi

Brassicales: Brassicaceae

Arabis serrata var. *hallaisanensis* is a perennial herb endemic to Korea that grows only at Mt. Halla in Jeju-do.This species is found in dry grasslands over 1,700 m above sea level neighboring stony or bare earth. The species is assessed as CR B2ab(iii,iv). Damage to natural habitats by landslides and wild animals may be threatening this species. There are currently no regional conservation measures.

Diapensia lapponica Linnaeus var. *obovata* F. Schmidt

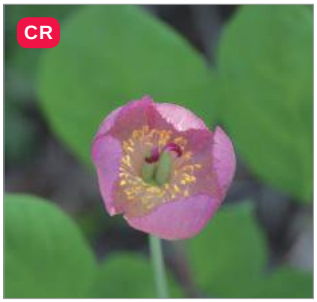
Ericales: Diapensiaceae

Diapensia lapponica var. *obovata* is an indeciduous shrub that about 500 individuals grow at the peak of Mt. Halla in Jeju-do.This species is found widely on mountain slopes over 1,700 m above sea level. The species is assessed as CR B2ab(iii). Illegal collection for its rarity and ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Viola raddeana Regel

Malpighiales: Violaceae

Viola raddeana is a perennial herb that was previously known from Gyeonggi-do and Gyeonsangnam-do. However, populations in Gyeonggi-do may be extirpated and those in Gyeonsangnam-do comprise only about 20 individuals in recent years. This species is found in moist grasslands where flooding occurs. The species is assessed as CR B2ab(iii); C2a(i); D1. Reduction of natural habitats by river development and refurbishment may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.



Paeonia obovata Maximowicz

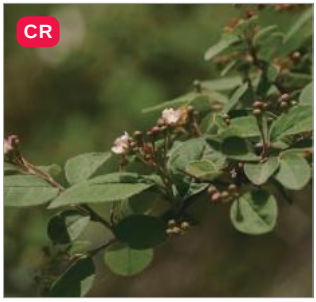
Saxifragales: Paeoniaceae

Paeonia obovata is a perennial herb that was used to be widespread throughout Korea. About 60 individuals have been found only at the Yeongwol area and Mt. Odae in Gangwon-do in recent years. This species is found in mountainous forests. The species is assessed as CR C2a(i). Collection for ornamental and medicinal use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Rhamnus taquetii (H. Léveillé and Vaniot) H. Léveillé

Rosales: Rhamnaceae

Rhamnus taquetii is a deciduous broadleaf-shrub endemic to Korea that grows only at Mt. Halla in Jeju-do. This species is found in shrubberies over 1,400 m above sea level. The species is assessed as CR B2ab(iii,iv). Habitat interference by construction of hiking trails may be threatening this species. There are currently no regional conservation measures.



Cotoneaster wilsonii Nakai

Rosales: Rosaceae

Cotoneaster wilsonii is a deciduous shrub endemic to Korea that about 100 individuals in 3 subpopulations grow only in Ulleung Island of Gyeonsangbuk-do and the largest of which comprises less than 50 individuals. This species is found on sunny cliffs with shallow soil at 110-130 m above sea level. The species is assessed as CR B2ab(ii); C2a(i). Illegal collection and human destruction of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Spiraea insularis (Nakai) H. Shin, Y.D. Kim and S.H. Oh

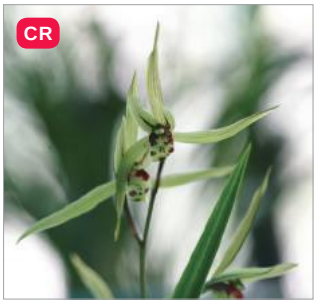
Rosales: Rosaceae

Spiraea insularis is a deciduous shrub endemic to Korea that about 500 individuals grow only in Ulleung Island of Gyeonsangbuk-do. This species is found on cliffs. The species is assessed as CR B2ab(ii); C2a(i). Damage of natural habitats by soil erosion may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Cremastra unguiculata (Finet) Finet

Asparagales: Orchidaceae

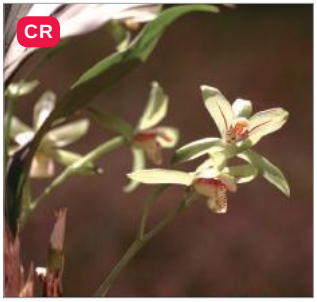
Cremastra unguiculata is a perennial orchid that grows only in Jeju-do. Natural habitats are very rare and very few individuals remain. This species is found in shady areas with rich humus in deciduous broadleaf forests. The species is assessed as CR B2ab(iii,v). Collection for ornamental use may be threatening this species. There are currently no regional conservation measures.



Cymbidium kanran Makino

Asparagales: Orchidaceae

Cymbidium kanran is an indeciduous perennial orchid that about 200 individuals grow only at Seogwipo area in Jeju-do. This species is found on valley cliffs in indeciduous broadleaf forests at 210-250 m above sea level. The species is assessed as CR A2d; B2ab(iv). Illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife and Natural Heritage by the law.



Cymbidium lancifolium Hooker

Asparagales: Orchidaceae

Cymbidium lancifolium is an indeciduous perennial orchid that only about 20 individuals grow at 2 southern valleys in Jeju-do. This species is found at shady areas with rich humus in indeciduous broadleaf forests. The species is assessed as CR B2ab(iii); D1. Illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Cypripedium guttatum Swartz

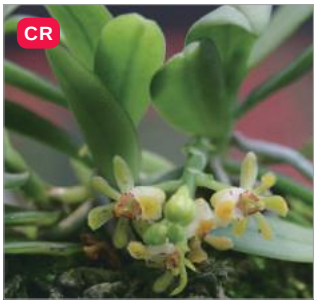
Asparagales: Orchidaceae

Cypripedium guttatum is a perennial orchid that about 30 individuals grow at a single locality in Gangwon-do. This species is found in groups in sunny forests at 1,000-1,400 m above sea level. The species is assessed as CR B2ab(iv); C2a(i,ii); D1. This species may be almost extirpated by illegal collection for ornamental use within its natural habitats. The species is regionally protected as Endangered Wildlife by the law.

Cypripedium japonicum Thunberg

Asparagales: Orchidaceae

Cypripedium japonicum is a perennial orchid that was once widespread throughout Gyeonggi-do. Four hundred individuals with fewer than 100 adult plants have been found at about 10 locations in Gangwon-do, Gyeonggi-do, Jeollabuk-do, and Jeollanam-do in recent years. This species is found in well-drained and shady habitats on sunny mountain slopes at 300-1,100 m above sea level. The species is assessed as CR C2a(ii)b. Low fertilization rate, failure of fruition caused by insect feeding, and collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.



Gastrochilus japonicus (Makino) Schlechter

Asparagales: Orchidaceae

Gastrochilus japonicus is an indeciduous epiphyte that only a few individuals grow in Jeju-do. This species is found on rocks and stalks of indeciduous broadleaf trees in low mountains. The species is assessed as CR C2a(i); D1. This species may be almost extirpated by illegal collection for its rarity within its natural habitats. The species is regionally protected as Endangered Wildlife by the law.

Kuhlhasseltia nakaiana (F. Maekawa) Ormerod

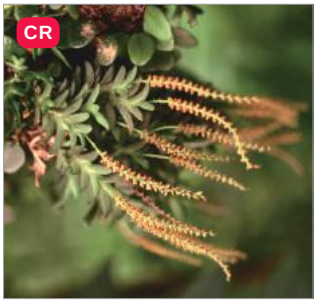
Asparagales: Orchidaceae

Kuhlhasseltia nakaiana is a perennial orchid that grows at only 10 locations in Gyeongsangbuk-do, Jeollabuk-do, Jeollanam-do, and Jeju-do. Just 2 populations have been found at 2 locations in Jeju-do in recent years and the largest population comprises only about 50 individuals. This species is found in deciduous broadleaf forests at 300-700 m above sea level in Jejudo and moist forests with rich humus in other areas. The species is assessed as CR A2acd; C2(a). Illegal collection for its rarity may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Neofinetia falcata (Thunberg) Hu

Asparagales: Orchidaceae

Neofinetia falcata is an indeciduous perennial orchid that previously known throughout the south coast of the Korea. However, this species may be almost extirpated by illegal collection and only 2 natural populations are left in Jeju-do. About 250 wild or restored individuals grow in Gyeongsangnam-do, Jeollanam-do, and Jeju-do. This species is found on airy and damp cliffs, and branch of trees. The species is assessed as CR A1acd; C2a(i). The species is regionally protected as Endangered Wildlife by the law.



Oberonia japonica (Maximowicz) Makino

Asparagales: Orchidaceae

Oberonia japonica is an indeciduous perennial epiphyte that grows at only 5 locations in Jeju-do. This species is found on trees in moist forests at 150-180 m above sea level. The species is assessed as CR B2ab(v); C2a(i). Illegal collection for its rarity may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Peristylus densus (Lindley) Santapau and Kapadia

Asparagales: Orchidaceae

Peristylus densus is a perennial orchid that grows only in Jeju-do. This species is found between *Aucuba japonica* forests and broadleaf forests.The species is assessed as CR B2ab(v). Collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Sedirea japonica (H.G. Reichenbach) Garay and H.R. Sweet

Asparagales: Orchidaceae

Sedirea japonica is a perennial epiphyte that was previously known from southern islands including Jeju-do. Though no observed data available for this species in last ten years, but artificially bred individuals grow at Bijarim and Mt. Sanbang in Jeju-do. This species is found on trees and rocks. The species is assessed as CR A1ad. Illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Zigadenus sibiricus (Linnaeus) A. Gray

Liliales: Liliaceae

Zigadenus sibiricus is a perennial herb that only about 50 individuals grow at a single location in Gangwon-do. This species is found in sunny mountain ridges at about 1,000 m above sea level. The species is assessed as CR B2ab(iii); D1. Illegal collection for its rarity may be threatening this species. There are currently no regional conservation measures.

Mankyua chejuense B.-Y. Sun, M.H. Kim and C.H. Kim

Ophioglossales: Ophioglossaceae

Mankyua chejuense is an indeciduous fern endemic to Korea that grows only at some locations in Jeju-do. This species is found at depressed hills and around wetlands. The species is assessed as CR B1ab(iii)c(v). Exploration of natural habitats, illegal collection, and habitats loss by urbanization may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Asplenium wrightii Eaton ex Hooker

Polypodiales: Aspleniaceae

Asplenium wrightii is a perennial fern that just 1 or 2 individuals grow at a single location in Jeju-do. This species is found on valley slopes in indeciduous broadleaf forests. The species is assessed as CR D1. Illegal collection for its rarity may be threatening this species. There are currently no regional conservation measures.

Nymphaea minima Nakai

Nymphaeales: Nymphaeaceae

Nymphaea minima is a perennial aquatic plant endemic to Korea that was previously known from Gyeonggi-do and Gangwon-do. Populations in Gyeonggi-do may be extirpated and those in Gangwon-do were found to comprise only about 500 individuals in recent years. This species is found in old ponds with sandy soil. The species is assessed as CR B2ab(ii,iii,iv). Destruction of wetlands by expansion of arable lands and reclamation, competition with other aquatic plants, removal of water plants for fishing, and collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Pterygopleurum neurophyllum (Maximowicz) Kitagawa

Apiales: Apiaceae

Pterygopleurum neurophyllum is a perennial herb that was previously known from Gyeonsangnam-do, Jeollabuk-do, Jeollanam-do, and Seoul. However, these populations, excluding those in Gyeonsangnam-do, may be extirpated due to draining of wetlands. This species is found near houses and in swampy forests. The species is assessed as CR B2ab(iii); C2a(i); D1. Destruction of wetlands and competition with other plants may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Astragalus membranaceus (Fischer) Bunge var. *alpinus* Nakai

Fabales: Fabaceae

Astragalus membranaceus var. *alpinus* is a perennial herb endemic to Korea that grows only at the peak of Mt. Halla in Jeju-do.This species is found in high grasslands over 1,600 m above sea level. The species is assessed as CR B2ab(iii). Habitat interference by construction of hiking trails may be threatening this species. There are currently no regional conservation measures.

Euchresta japonica Hooker f. ex Regel

Fabales: Fabaceae

Euchresta japonica is a non-deciduous shrub that only about 40 individuals grow at 6 locations in Jeju-do. This species is found in moist valleys with rich humus. The species is assessed as CR B2ab(iii); D1. Disturbance of natural habitats by tourists may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Potamogeton alpinus Balbis

Alismatales: Potamogetonaceae

Potamogeton alpinus is a submerged aquatic plant that grows only at Yeongwol area in Gangwon-do. Populations in Gyeongsangbuk-do, a previously known locality of this species, may be almost extirpated. This species is found near rivers or waterways with moderate water flow. The species is assessed as EN B2ab(iii, iv). Water pollution may be threatening this species. There are currently no regional conservation measures.

Zostera geojeensis H. Shin, K.-H. Cho and Y.-S. Oh

Alismatales: Zosteraceae

Zostera geojeensis is a perennial seagrass that grows only in Chungcheongnam-do and Gyeongsangnam-do. However, populations in Geoje Island of Gyeongsangnam-do where was the first place this species reported may be almost extirpated. This species is found at sands and tidelands along the coast. The species is assessed as EN B2ab(i, ii, iii). Coastal reclamation may be threatening this species. There are currently no regional conservation measures.

Anaphalis sinica Hance var. *sinica*

Asterales: Asteraceae

Anaphalis sinica var. *sinica* is a perennial herb that only a few individuals grow at Mt. Seorak in Gangwon-do. This species is found on rocky mountain ridges. The species is assessed as EN B2ab(iii,iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Anaphalis sinica Hance var. *morii* (Nakai) Ohwi

Asterales: Asteraceae

Anaphalis sinica var. *morii* is a perennial herb that grows only at 5 locations of Mt. Halla in Jeju-do. This species is found sparsely in dry and sunny highland grasslands. The species is assessed as EN B2ab(iii,iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Aster altaicus Willdenow var. *uchiyamae* Kitamura

Asterales: Asteraceae

Aster altaicus var. *uchiyamae* is a biennial herb endemic to Korea that grows only at the Yoeju area in Gyeonggi-do and the Danyang area in Chungcheongbuk-do. The estimated total is more than 2,000 individuals. This species is found on sands and gravels along rivers. The species is assessed as EN B2ab(iii)c(iii,iv,v). Most of the populations in Gyeonggi-do may have been extirpated during Four river refurbishment project. The species is regionally protected as Endangered Wildlife by the law.

Dendranthema coreana (H. Léveillé and Vaniot) Voroschilov

Asterales: Asteraceae

Dendranthema coreana is a perennial herb endemic to Korea that grows only at 5 locations in Jeju-do. The estimated number of individuals is very small. This species is found between bare rocks and in stony areas. The species is assessed as EN B2ab(iii,iv). Collapse of natural habitats by landslides or soil erosion may be threatening this species. There are currently no regional conservation measures.

Dendranthema zawadskii (Herbich) Tzvelev var. *lucida* (Nakai) J.H. Pak

Asterales: Asteraceae

Dendranthema zawadskii var. *lucida*, once considered extinct, is a perennial herb endemic to Korea that grows only in Ulleung Island of Gyeonsangbuk-do. Several populations comprising only a few individuals have been found in recent years. This species is found at basins. However, bred individuals grow along the coastal roads. The species is assessed as EN B2ab(iii,iv). Natural habitat interference by construction of hiking trails may be threatening this species. There are currently no regional conservation measures.

Adenophora palustris Komarov

Asterales: Campanulaceae

Adenophora palustris is a perennial herb that grows in Gangwon-do, Gyeongsangnam-do, and Jeollabuk-do. This species is found in mountainous wetlands or swampy habitats. The species is assessed as EN B2ab(iii). Wetlands damage may be threatening this species. There are currently no regional conservation measures.

Nymphoides coreana (H. Léveillé) H. Hara

Asterales: Menyanthaceae

Nymphoides coreana is a perennial floating-leaved aquatic plant that grows only at sand dunes or coastal wetlands in Gangwon-do and Jeju-do. This species is found at lentic, sunny, and shallow ponds and wetlands. The species is assessed as EN B2ab(iii). Wetland development may be threatening this species. There are currently no regional conservation measures.

Zabelia tyaihyonii (T.H. Chung ex Nakai) Hisauti and H. Hara

Dipsacales: Caprifoliaceae

Zabelia tyaihyonii is a deciduous shrub endemic to Korea that grows only at limestone areas in Gangwon-do and Chungcheongbuk-do. The largest population comprises about 100 individuals. This species is found on sunny forest ridges at 200-300 m above sea level. The species is assessed as EN B2ab(iii,v); C2a(i). Illegal collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Amsonia elliptica (Thunberg) Roemer and Schultes

Gentianales: Apocynaceae

Amsonia elliptica is a perennial herb that abundant individuals grow only at coastal areas in Jeollanam-do and Incheon. This species is found in sands and grasslands along the coast. The species is assessed as EN B2ab(iv). Indiscriminate collection for ornamental and medicinal use may be threatening this species. There are currently no regional conservation measures.

Cynanchum amplexicaule (Siebold and Zuccarini) Hemsley

Gentianales: Apocynaceae

Cynanchum amplexicaule is a perennial herb that only a few individuals grow in Gangwon-do, Gyeonggi-do, and Jeju-do. This species is found in grassland ridges. The species is assessed as EN B2ab(iii). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Gentiana jamesii Hemsley

Gentianales: Gentianaceae

Gentiana jamesii is a perennial herb that only a few individuals grow at Yongneup of Mt. Daeam in Gangwon-do. This species is found in wetlands. The species is assessed as EN B2ab(iii,iv). Damage of natural habitats by reclamation may be threatening this species. There are currently no regional conservation measures.

Swertia dichotoma Linnaeus

Gentianales: Gentianaceae

Swertia dichotoma is an annual herb that 600 to 1,000 individuals grow only at Mt. Taebaek in Gangwon-do. The species is found around valleys. The species is assessed as EN B2ab(iii)c(iv). Expansion of hiking trails and people trampling may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Lasianthus japonicus Miquel

Gentianales: Rubiaceae

Lasianthus japonicus is an indeciduous shrub that about 20 individuals grow only at the Seogwipo area in Jeju-do. The species is found on rocks in tropical or subtropical indeciduous broadleaf forests and moist valley cliffs. The species is assessed as EN B2ab(iii); D1. Potential threat due to its rarity and development of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Pogostemon yatabeanus (Makino) Press

Lamiales: Lamiaceae

Pogostemon yatabeanus is a perennial herb that grows only in Jeju-do. This species is found in grassy wetlands of lowlands at 130 m above sea level. The species is assessed as EN B2ab(iii,iv). Reclamation of wetlands and environment pollution may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Lamium takeshimense Nakai

Lamiales Lamiaceae

Lamium takeshimense is a perennial herb endemic to Korea that grows only in Ulleung Island of Gyeongsangbuk-do. Only about 5 populations comprising only a few individuals have been found in recent years. This species is found around forests. The species is assessed as EN B2ab(iii,iv); C2a(ii). Exploration of natural habitats and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Utricularia intermedia Hayne

Lamiales: Lentibulariaceae

Utricularia intermedia is a perennial carnivorous plant that grows only at Yongneup of Mt. Daeam in Gangwon-do. This species is found in shallow highland swamps. The species is assessed as EN B2ab(i,ii,iii). Destruction of natural habitats by sports facilities and landization by soil inflows may be threatening this species. There are currently no regional conservation measures.

Orobanche filicicola Nakai ex J.-O. Hyun, Y. Im and H. Shin

Lamiales: Orobanchaceae

Orobanche filicicola is a perennial herb endemic to Korea that about 2,000 individuals grow at Mt. Baegyang in Jeollabuk-do, the Gangjin area in Jeollanam-do, and the Daejeong area in Jeju-do. This species is parasitic on the *Artemisia spp.* growing on sands and gravels around banks and rivers. The species is assessed as EN B2ab(iii,v); C2a(i). Road construction and reclamation may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Centranthera cochinchinensis (Loureiro) Merrill var. *lutea* (H. Hara) H. Hara

Lamiales: Scrophulariaceae

Centranthera cochinchinensis var. *lutea* an annual herb that was previously known from Jeollabuk-do, Jeollanam-do, and Gyeongsangbuk-do. However, populations of Gyeongsangbuk-do have extirpated in recent years. This species is found in wetlands and levee of rice fields. The species is assessed as EN B2ab(iii,iv). Reduction of natural habitats by wetland development may be threatening this species. There are currently no regional conservation measures.

Limosella aquatica Linnaeus

Lamiales: Scrophulariaceae

Limosella aquatica is an annual herb that was previously known from Seoul and only a few individuals have been found in Gyeongsandnam-do and Busan in recent years. This species is found around rivers and ponds. The species is assessed as EN B2ab(iii,iv). Destruction of natural habitats by river refurbishment and reclamation may be threatening this species. There are currently no regional conservation measures.

Pedicularis hallaisanensis Hurusawa

Lamiales: Scrophulariaceae

Pedicularis hallaisanensis is an annual or biennial herb that grows isolated at Mt. Bangtae and Mt. Seorak in Gangwon-do, Mt. Kaya in Gyeongsangnam-do, and Mt. Halla in Jeju-do. This species is found sparsely around rocky areas, on ridges, and in flatlands at the mountain peak. The species is assessed as EN B2ab(iii). People trampling, landslides, and illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Pedicularis mandshurica Maximowicz

Lamiales: Scrophulariaceae

Pedicularis mandshurica is a perennial herb that grows only at the northern part of Mt. Seorak in Gangwon-do. This species is found on rocky mountain ridges. The species is assessed as EN B2ab(iii). Exploration of natural habitats may be threatening this species. There are currently no regional conservation measures.

Pseudolysimachion kiusianum (Furumi) Holub var. *diamantiacum* (Nakai) Y.N. Lee

Lamiales: Scrophulariaceae

Pseudolysimachion kiusianum var. *diamantiacum* is a perennial herb endemic to Korea that only a few individuals grow at Mt. Seorak in Gangwon-do. This species is found at rocky areas around forests of highland ridges. The species is assessed as EN B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Scrophularia takesimensis Nakai

Lamiales: Scrophulariaceae

Scrophularia takesimensis is perennial herb endemic to Korea that about 500 plants including restored individuals grow only at the coast of Ulleung Island of Gyeongsangbuk-do. This species is found between gravels along the coast and on road masonries, whereas young plants grow on sands. The species is assessed as EN A2ac; B2ab(iii,iv)c(iii,iv,v); C2a(i). Destruction of natural habitats by construction of coastal roads and typhoons may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Lychnis wilfordii (Regel) Maximowicz

Caryophyllales: Caryophyllaceae

Lychnis wilfordii is a perennial herb that grows only at tall mountainous areas in Gangwon-do. The estimated number of individuals is less than 300. This species is found sparsely in wetlands of tall mountains. The species is assessed as EN B2ab(v). Illegal collection for ornamental and medicinal use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Phytolacca insularis Nakai

Caryophyllales: Phytolaccaceae

Phytolacca insularis is a perennial herb endemic to Korea that only about 100 individuals grow in Ulleung Island of Gyeongsangbuk-do. This species is found on sunny slopes at 30-150 m above sea level or sparsely around houses. The species is assessed as EN C2a(i). Destruction of natural habitats by development may be threatening this species. There are currently no regional conservation measures.

Carex chordorrhiza Linnaeus f.

Poales: Cyperaceae

Carex chordorrhiza is a perennial herb that grows only at Yongneup of Mt. Daeam in Gangwon-do. This species is found in shallow puddles. The species is assessed as EN B2ab(iii). Destruction of natural habitats by sports facilities and landization by soil inflows may be threatening this species. There are currently no regional conservation measures.

Rhododendron aureum Georgi

Ericales: Ericaceae

Rhododendron aureum is an indeciduous shrub that about 20 individuals grow only at Mt. Seorak in Gangwon-do. This species is found in sunny highland shrubberies over 1,600 m above sea level. The species is assessed as EN B2ab(iii); C2a(1); D1. Competition for light with neighboring trees and damage of natural habitats due to proximity of hiking trails may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Androsace cortusifolia Nakai

Ericales: Primulaceae

Androsace cortusifolia is a perennial herb endemic to Korea that about 10 populations with small number of individuals occur only at Mt. Seorak in Gangwon-do. This species is found at shady habitats in rocky areas. The species is assessed as EN B2ab(iii, iv). Reduction of natural habitats may be threatening this species. There are currently no regional conservation measures.

Lysimachia leucantha Miquel

Ericales: Primulaceae

Lysimachia leucantha is a perennial herb that grows only in Jeollanam-do and Jeju-do. This species is found around ponds and in mountainous wetlands. The species is assessed as EN B2ab(ii, iii, iv). Reclamation of wetlands may be threatening this species. There are currently no regional conservation measures.

Lysimachia pentapetala Bunge

Primulales: Primulaceae

Lysimachia pentapetala is a perennial herb that only about 100 individuals grow only in Hong Island of Jeollanam-do. This species is found in wetlands, along roads, and around forests. The species is assessed as EN B2ab(iv). Exploration of natural habitats and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Hypericum oliganthum Franchet and Savatier

Malpighiales: Clusiaceae

Hypericum oliganthum is a perennial herb that only a few individuals grow in Jeollanam-do and Gyeongsangnamdo. This species is found in sunny and swampy habitats. The species is assessed as EN B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Salix blinii H. Léveillé

Malpighiales: Salicaceae

Salix blinii is a deciduous shrub that grows only at 5 locations in Jeju-do. This species is found in valleys with prominent bedrocks at 1,200-1,600 m above sea level. The species is assessed as EN B2ab(iii). Decline in the overall number of individuals during ecological succession may be threatening this species. There are currently no regional conservation measures.

Viola biflora Linnaeus

Malpighiales: Violaceae

Viola biflora is a perennial herb that only about 50 individuals grow at Mt. Seorak in Gangwon-do. This species is found in moist grasslands of tall mountains. The species is assessed as EN D1. Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Viola mirabilis Linnaeus

Malpighiales: Violaceae

Viola mirabilis is a perennial herb that only about 200 individuals grow at the Yeongwol area in Gangwon-do. This species is found in sunny deciduous forests. The species is assessed as EN B2ab(iii); C2a(ii). Illegal collection for its rarity may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Viola websteri Hemsley

Malpighiales: Violaceae

Viola websteri is a perennial herb that only about 10 populations occur in Gangwon-do, Gyeonggi-do, and Chungcheongbuk-do. The largest population comprises about 400 individuals. This species is found in moist valley ridges at 1,000 m above sea level. The species is assessed as EN B2ab(iii); C2a(i). Natural habitat interference by construction of hiking trails may be threatening this species. There are currently no regional conservation measures.

Mitella nuda Linnaeus

Saxifragales: Saxifragaceae

Mitella nuda is a perennial herb that grows only at Mt. Taebaek in Gangwon-do. This species is found in swampy forests and wetlands, and around valley edges. The species is assessed as EN B2ab(iii). Exploration of natural habitats and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Berchemia floribunda (Wallich) Brongniart

Rosales: Rhamnaceae

Berchemia floribunda is a deciduous broadleaf vine that about 50 individuals grow only in Anmyeon Island of Chungchenognam-do. This species is found at lower places in *Pinus densiflora* forests. The species is assessed as ENC2a(i); D1. Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Berchemia racemosa Siebold and Zuccarini

Rosales: Rhamnaceae

Berchemia racemosa, once considered extirpated, is a deciduous broadleaf vine that grows only at the Gunsan area in Jeollabuk-do. The estimated total is less than 200 individuals, including 4 restored ones. The species is found on coastal slopes with silt loam in lowlands below 100 m above sea level. The species is assessed as EN B2ab(iii); C2a(i, ii); D1. Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Paliurus ramosissimus (Loureiro) Poiret

Rosales: Rhamnaceae

Paliurus ramosissimus is a deciduous broadleaf shrub that about 250 individuals grow only at 6 locations along the coast of Jeju-do. This species is found on slopes along the lava coast. The species is assessed as EN B2ab(iii); C2a(i). Destruction of natural habitats by the construction of coastal roads and facilities may be threatening this species. There are currently no regional conservation measures.

Amelanchier asiatica (Siebold and Zuccarini) Endlicher ex Walpers

Rosales: Rosaceae

Amelanchier asiatica is a deciduous shrub or tree that only a few individuals grow in Jeju-do. This species is found sparsely in deciduous broadleaf forests at 700-1,000 m above sea level. The species is assessed as EN B2ab(iv). Collapse of natural habitats and indiscriminate collection for ornamental and medicinal use may be threatening this species. There are currently no regional conservation measures.

Crataegus komarovii Sargent

Rosales: Rosaceae

Crataegus komarovii is a small tree endemic to Korea that grows only in Gangwon-do. The estimated number of individuals is very small and growth is poor. This species is found in tall mountains. The species is assessed as EN B2ab(iii, iv). Illegal collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Prunus × *yedoensis* Matsumura

Rosales: Rosaceae

Prunus × *yedoensis* is a deciduous tree endemic to Korea that only about 5 populations occur at Mt. Halla in Jeju-do. The estimated number of individuals is very small. This species is found in deciduous broadleaf forests at 450-900 m above sea level. The species is assessed as EN B2ab(iv). There are currently no regional conservation measures.

Spiraea chartacea Nakai

Rosales: Rosaceae

Spiraea chartacea is a deciduous shrub that grows only at islands in the Shinan area of Jeollanam-do. This species is found in shrubberies on mountain bedrocks. The species is assessed as EN B2ab(iv). No major widespread threats have been reported to this species. There are currently no regional conservation measures.

Oreocnide frutescens (Thunberg) Miquel

Rosales: Urticaceae

Oreocnide frutescens is a deciduous shrub that only a few individuals grow in Biyang Island of Jeju-do. This species is found in a colony in a volcanic crater. The species is assessed as EN B2ab(iii, iv). Illegal collection may be threatening this species. There are currently no regional conservation measures.

Lycoris × *chejuensis* K.H. Tae and S.C. Ko

Asparagales: Amaryllidaceae

Lycoris × *chejuensis* is a perennial herb endemic to Korea that grows only at 5 locations in Jeju-do. This species is found in pastures of lowlands and in grasslands around valleys below 300 m above sea level. The species is assessed as EN B2ab(iii). Reduction of natural habitats by road construction may be threatening this species. There are currently no regional conservation measures.

Lycoris chinensis Traub var. *sinuolata* K.H. Tae and S.C. Ko

Asparagales: Amaryliadacea

Lycoris chinensis var. *sinuolata* is a perennial herb that grows only at 4 locations in Jeollabuk-do and Jeollanam-do. The largest population comprises about 500 individuals at Mt. Naejang in Jeollabuk-do. This species is found in groups on mountain slopes and in stony valley areas. The species is assessed as EN B2ab(iii); C2a(i). Natural habitat interference by climbers and localized heavy rain may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Iris dichotoma Pallas

Asparagales: Iridaceae

Iris dichotoma is a perennial herb that about 650 individuals grow only at Baengnyeong and Daecheong Islands of Incheon. This species is found along the fertile and sunny coast. The species is assessed as EN B2ab(v). Destruction of natural habitats by grazing may be threatening this species. There are currently no regional conservation measures.

Iris setosa Pallas ex Link

Asparagales: Iridaceae

Iris setosa is a perennial herb that grows along the coast of Gangwon-do and the Pohang area in Gyeongsangbuk-do. This species is found in sunny wetlands. The species is assessed as EN B2ab(iii). Wetland development and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Bupleurum latissimum Nakai

Apiales: Apiaceae

Bupleurum latissimum, once considered extinct, is a perennial herb endemic to Korea that about 650 plants, including restored individuals, grow only in Ulleung Island of Gyeongsangbuk-do. This species is found at steep and shady habitats at 40-300 m above sea level. The species is assessed as EN B2ab(iii); C2a(ii). Competition with other shrubs or vines may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Burmannia championii Thwaites

Dioscoreales: Burmanniaceae

Burmannia championii is a saprophyte that grows only at the southern slope of Mt. Halla in Jeju-do. The range of natural habitats is very narrow and estimated number of individuals is very small. This species is found in shady deciduous broadleaf forests or *Cryptomeria japonica* forests with thin herb layer and rich humus. The species is assessed as EN B2ab(iv). Exploration of natural habitats and indiscriminate collection may be threatening this species. There are no regional conservation measures currently.

Burmannia cryptopetala Makino

Dioscoreales: Burmanniaceae

Burmannia cryptopetala is a saprophyte that grows only at the southern slope of Mt. Halla in Jeju-do. The range of this species' natural habitats is very narrow and estimated number of individuals is very small. This species is found at lower shady habitats in *Cryptomeria japonica* forests with a sparse herb layer and rich humus. The species is assessed as EN B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Chamaegastrodia shikokiana (Makino) Makino and F. Maekawa

Asparagales: Orchidaceae

Chamaegastroida shikokiana is a perennial herb that grows at Mt. Naejang Jeollabuk-do, Mt. Baegyang in Jeollanam-do, and Jeju-do. This montane species is saprophytic on dead plants in shady habitats with thick leaf litter. The species is assessed as EN B2ab(iv). Indiscriminate collection for its rarity and medicinal use may be threatening this species. There are currently no regional conservation measures.

Cleisostoma scolopendrifolium (Makino) Garay

Asparagales: Orchidaceae

Cleisostoma scolopendrifolium is an indeciduous perennial orchid that grows only at the southern coastal areas and in Jeju-do. The extent of occurrence (EOO) of the species was calculated as 2,000 km^2. This species is found in moist rocky areas. The species is assessed as EN B2b(iii,iv)c(iii,iv,v). The number of individuals is variable yearly depending on the growth habits. Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Cymbidium macrorhizon Lindley

Asparagales: Orchidaceae

Cymbidium macrorhizon is a saprophyte that was previously known from the southern coast including Jeju-do and some locations of Gangwon-do. The largest population comprises about 250 individuals. This species is found in forests with rich humus. The species is assessed as EN A2cd; C2a(i)b. Destruction of natural habitats by afforestation and road construction may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Cypripedium macranthos Swartz

Asparagales: Orchidaceae

Cypripedium macranthos is a perennial herb that grows throughout Korea except Ulleung Island and Jeju-do. This species is found at well drained shady habitats in mountainous grasslands and in forests. The species is assessed as EN A1(d). Illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Dendrobium moniliforme (Linnaeus) Swartz

Asparagales: Orchidaceae

Dendrobium moniliforme is an indeciduous perennial epiphyte that about 5,000 individuals grow along the south coast of Korea. This species is found on trees in valleys at 450 m above sea level. The species is assessed as VU C2a(i). Illegal collection for ornamental and medicinal use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Gastrochilus matsuran (Makino) Schlechter

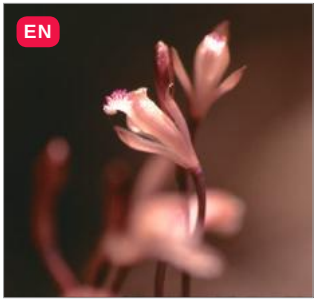
Asparagales: Orchidaceae

Gastrochilus matsuran is an indeciduous epiphyte that about 100 individuals grow only in the southern coast of Gyeongsangnam-do and Jeju-do. This species is found on trees such as *Torreya nucifera*, *Acer palmatum*, and *Pinus densiflora*. The species is assessed as EN B2ab(iv); C2a(i). Indiscriminate collection for its rarity and ornamental use may be threatening this species. There are currently no regional conservation measures.

Lecanorchis japonica Blume

Asparagales: Orchidaceae

Lecanorchis japonica is a saprozoic orchid that only a few individuals grow in islands of Jeollanam-do and Jeju-do. This species is found at shady habitats in indeciduous forests. The species is assessed as EN B2ab(iv). Illegal collection may be threatening this species. There are currently no regional conservation measures.



Lecanorchis kiusiana Tuyama

Asparagales: Orchidaceae

Lecanorchis kiusiana is an indeciduous saprophytic orchid that grows only at 5 locations in Jeju-do. The estimated number of individuals is very small. This species is found at shady habitats on the slopes with thick leaf litter. The species is assessed as EN B2ab(iii). Destruction of natural habitats may be threatening this species. There are currently no regional conservation measures.

Liparis auriculata Blume ex Miquel

Asparagales: Orchidaceae

Liparis auriculata is a deciduous perennial herb that grows only at 5 locations in Jeju-do. The range of natural habitats is very narrow and estimated number of individuals is very small. This species is found with *Utricularia racemosa* around grasslands at 1,000 m above sea level. The species is assessed as EN B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Oreorchis coreana Finet

Asparagales: Orchidaceae

Oreorchis coreana is a perennial orchid endemic to Korea that only a few individuals grow at 5 locations at Gotjawal area in Jeju-do. This species is found between the rocks with rich humus at 400-600 m above sea level. The species is assessed as EN B2ab(iii, iv). Community development and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Platanthera minor (Miquel) H.G. Reichenbach

Asparagales: Orchidaceae

Platanthera minor is a perennial herb that only a few individuals grow in Chuja Island of Jeju-do. This species is found in sunny grasslands. The species is assessed as EN B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Pecteilis radiata (Thunberg) Rafinesque

Asparagales: Orchidaceae

Pecteilis radiata is a perennial herb that 200 individuals at most grow only in Gangwon-do, Gyeonggi-do, and Gyeongsangbuk-do. However, populations at Mt. Chilbo in Gyeonggi-do may be almost extirpated. This species is found in sunny and moist grasslands, and wetlands. The species is assessed as EN C2a(i). Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Thrixspermum japonicum (Miquel) H.G. Reichenbach

Asparagales: Orchidaceae

Thrixspermum japonicum is an indeciduous perennial epiphyte that grows only in Jeju-do. The estimated population size is less than 50 individuals. This species is found on mature trees in moist valleys at 250-350 m above sea level. The species is assessed as EN B2ab(v); D1. Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Lilium dauricum Ker Gawler

Liliales: Liliaceae

Lilium dauricum is a perennial herb that was previously known from Mt. Baegam and Mt. Daeam in Gangwon-do, and Mt. Deogyu in Jeollabuk-do. However, population of Mt. Deogyu may be extirpated and estimated number of individuals is 250 at most. This species is found on the mountain ridges at 1,400 m above sea level. The species is assessed as EN C2a(i). Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Metanarthecium luteoviride Maximowicz

Dioscoreales: Nartheciaceae

Metanarthecium luteoviride is a perennial herb that grows only in Gyeonggi-do and Gyeongsangnam-do. However, populations in Gyeonggi-do may be almost extirpated and about 30 individuals were reintroduced in recent years. The populations in Gyeongsangnam-do comprise about 350 individuals. This species is found in sunny grasslands. The species is assessed as EN B2ab(iii, v). Indiscriminate collection and destruction of natural habitats by widening mountain roads may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Trillium tschonoskii Maximowicz

Liliales: Melanthiaceae

Trillium tschonoskii is a perennial herb that about 3,000 individuals in 10 populations occur only in Ulleung Island of Gyeonsangbuk-do. This species is found at shady habitats in forests. The species is assessed as EN C2a(i). Road expansion may be threatening this species. There are currently no regional conservation measures.

Lycopodium cryptomerianum Maximowicz

Lycopodiales: Lycopodiaceae

Lycopodium cryptomerianum is an indeciduous perennial fern that only about 5 populations occur in Jeollanam-do and Jeju-do. The estimated number of individuals is very small. This species is found in lowland valleys of deciduous broadleaf forests. The species is assessed as EN B2ab(iv). Indiscriminate collection may be threatening this species. There are no regional conservation measures currently.

Lycopodium complanatum Linnaeus

Lycopodiales: Lycopodiaceae

Lycopodium complanatum is an indeciduous fern that only a few individuals grow at Mt. Seorak in Gangwon-do. This species is found in sunny grasslands and forests of tall mountains. The species is assessed as EN B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Abies koreana E.H. Wilson

Pinales: Pinaceae

Abies koreana is a coniferous tree endemic to Korea that grows at Mt. Deogyu in Jeollabuk-do, Mt. Jiri in Jeollanam-do, Mt. Gaya in Gyeongsangnam-do, and Mt. Halla in Jeju-do. This species is found in highlands at 1,000-1,900 m above sea level. The species is assessed as EN B2ab(ii, iii, v). Invasion of *Sasa quelpaertensis* threatens this species on Mt. Halla, and spread of blight disease may be threatening populations in other areas. There are currently no regional conservation measures.

Asplenium antiquum Makino

Polypodiales: Aspleniaceae

Asplenium antiquum, once considered regionally extinct, is an indeciduous perennial herb that grows only in Seop Island of Jeju-do. However, about 10 young individuals from Japan and Taiwan were reintroduced into the wild. This species is found between rocks and tree trunks in moist forests. The species is assessed as EN B2ab(iii); C2a(i). Road expansion may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Colysis simplicifrons (H. Christ) Tagawa

Polypodiales: Polypodiaceae

Colysis simplicifrons is an indeciduous perennial fern that grows only in Jeju-do. The extent of occurrence (EOO) of the species was very narrow and calculated as 25 m^2. This species is found in moist lowlands.The species is assessed as EN B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Microsorum buergerianum (Miquel) Ching

Polypodiales: Polypodiaceae

Microsorum buergerianum is a perennial herb that grows only at the Gotjawal area in Jeju-do. This species is found on trees and rocks in indeciduous broadleaf lowland forests. The species is assessed as EN B2ab(iv). Indiscriminate collection for its rarity may be threatening this species. There are currently no regional conservation measures.

Psilotum nudum (Linnaeus) P. Beauvois

Psilotales: Psilotaceae

Psilotum nudum is a fernlike plant that about 2,000 individuals grow only in Jeollanam-do and Jeju-do. The largest population comprises less than 250 individuals. This species is found around joint walls of sunny and dry rocky areas. The species is assessed as EN C2a(i). Competition with other epiphytes may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Adiantum capillus-junonis Ruprecht

Pteridales: Adiantaceae

Adiantum capillus-junonis is a summer-green fern that grows only at the limestone area in Gangwon-do and Chungcheongbuk-do. Its range of natural habitats is very narrow and estimated number of individuals is small. This species is found in colonies alongside mosses in moist limestone areas. The species is assessed as EN B2ab(iii). There are currently no regional conservation measures.

Selaginella sibirica (Milde) Hieronymus

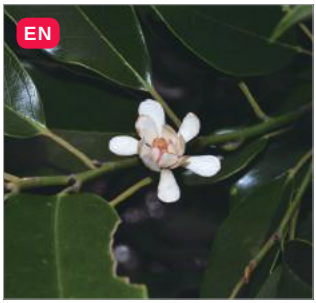
Selaginellales: Selaginellaceae

Selaginella sibirica is an indeciduous perennial fern that only a single population occurs in Ulleung Island of Gyeongsangbuk-do. This species is found on rocks. The species is assessed as EN B2ab(iv). Destruction of natural habitats by soil erosion may be threatening this species. There are currently no regional conservation measures.

Sarcandra glabra (Thunberg) Nakai

Chloranthales: Chloranthaceae

Sarcandra glabra is an indeciduous shrub that only about 50 individuals grow only at the Seogwipo area in Jeju-do. This species is found at humid areas with rich humus in indeciduous broadleaf forests. The species is assessed as EN B2ab(iii); C2a(i); D1. Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.



Michelia compressa (Maximowicz) Sargent

Magnoliales: Magnoliaceae

Michelia compressa is an indeciduous tree that only about 40 individuals grow in Jeollanam-do and Jeju-do. This species is found on riverine slopes with rich humus. The species is assessed as EN C2a(i). Destruction of natural habitats by localized heavy rain and strong wind may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Saururus chinensis (Loureiro) Baillon

Piperales: Saururaceae

Saururus chinensis is a perennial herb that 2,500 plants including restored individuals grow only at southern parts in Jeju-do. This species is found in groups in fallow grounds, ditches, and streams along the lowland coast below 50 m above sea level. The species is assessed as EN B2ab(iii, iv). Construction of coastal roads and indiscriminate collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Corydalis filistipes Nakai

Ranunculales: Papaveraceae

Corydalis filistipes a perennial herb endemic to Korea that 4 to 5 subpopulations occur only in Ulleung Island of Gyeongsangbuk-do. This species is found along slopes at 500-900 m above sea level. The species is assessed as EN B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Cimicifuga heracleifolia Komarov

Ranunculales: Ranunculaceae

Cimicifuga heracleifolia is a perennial herb endemic to Korea that grows in Gangwon-do, Gyeonggi-do, and Chungcheongnam-do. This species is found sparsely, in clusters of 2-3 plants, in forests. The species is assessed as EN B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Thalictrum coreanum H. Léveillé

Ranunculales: Ranunculaceae

Thalictrum coreanum is a perennial herb endemic to Korea that about 3,000 individuals grow only at Mt. Seorak and the Pyeongchang area in Gangwon-do. This species is found between rocks in sunny grasslands. The species is assessed as EN B2ab(iii). Illegal collection for medicinal use due to its similar appearance to medicinal plants and construction of hiking trails may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Kirengeshoma koreana Nakai

Cornales: Hydrangeaceae

Kirengeshoma koreana is a perennial herb that about 500 individuals grow at Mt. Baegun in Jeollanam-do and large population found at the Sancheong area in Gyeongsangnam-do. This species is found on flats in *Quercus acutissima* forests with highly moist soil. The species is assessed as EN B1ab(iii). Apart from underproduction of seeds, heavy rainfall at flowering season and exploration of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Tribulus terrestris Linnaeus

Zygophyllales: Zygophyllaceae

Tribulus terrestris is an annual herb that grows along the coast of Gyeongsangbuk-do, Geojedo Island of Gyeongsangnam-do, and Jeju-do. This species is found on sands of the sunny coast. The species is assessed as EN B2ab(iii)c(iii, iv). Construction of coastal roads and typhoons may be threatening this species. There are currently no regional conservation measures.

Caldesia parnassifolia (Bassi ex Linnaeus) Parlatore

Alismatales: Alismataceae

Caldesia parnassifolia is an annual herb that grows only at the Paju area in Gyeonggi-do and Jeju-do. The area of occupancy (AOO) of the species is narrow. This species is found at shallow ponds and agricultural waterways. The species is assessed as VU B2ab(iii,iv). Wetland development may be threatening this species. There are currently no regional conservation measures.

Blyxa aubertii Richard

Alismatales: Hydrocharitaceae

Blyxa aubertii is a submerged annual aquatic plant that grows in Gyeonggi-do, Jeollabuk-do, and Jeju-do. This species is found mainly at rice fields and waterways, sometimes in mountainous grasslands. The species is assessed as VU B2abc(ii,iii,iv). Wetland development may be threatening this species. There are currently no regional conservation measures.

Potamogeton perfoliatus Linnaeus

Alismatales: Potamogetonaceae

Potamogeton perfoliatus is a submerged perennial aquatic plant that grows only in Gangwon-do and Gyeonggi-do. Most of the populations along the Han River basin have been extirpated. This species is found at lentic areas around rivers and benthic regions. The species is assessed as VU A2c; B2ab(iii,iv). Destruction of natural habitats by river refurbishment and water pollution may be threatening this species. There are currently no regional conservation measures.

Stuckenia pectinata (Linnaeus) Borner

Alismatales: Potamogetonaceae

Stuckenia pectinata is a submerged perennial aquatic plant that grows only at brackish water zones along the coast throughout Korea and limestone areas in inland. This species is found at lentic brackish water zones and around streams in limestone areas. The species is assessed as VU B2ab(ii,iii,iv). Reclamation of natural habitats and water pollution may be threatening this species. There are currently no regional conservation measures.

Zostera caespitosa Miki

Alismatales: Zosteraceae

Zostera caespitosa is a monoecious perennial herb that grows isolated along the coast throughout Korea. This species is found along coasts at 3-5 m in water depth. The species is assessed as VU B2ab(ii,iii). Reduction of natural habitats by development and water pollution may be threatening this species. The species is regionally protected as Protected Marine Organism by the law.

Zostera japonica Ascherson and Graebner

Alismatales: Zosteraceae

Zostera japonica is an oceanic angiosperm that grows along intertidal zones of the southwest coast. This species is found on sandy soils in intertidal zones. The species is assessed as VU B2ab(iii,iv). Development of intertidal zones may be threatening this species. There are currently no regional conservation measures.

Ligularia taquetii (H. Léveillé and Vaniot) Nakai

Asterales: Asteraceae

Ligularia taquetii is a perennial herb that only a few individuals grow at 10 locations in Gyeongsangnam-do, Jeollanam-do, and Jeju-do. This species is found in sunny grasslands. The species is assessed as VU B2ab(iii,iv). Destruction of natural habitats by grazing may be threatening this species in Jeju-do. There are currently no regional conservation measures.

Saussurea polylepis Nakai

Asterales: Asteraceae

Saussurea polylepis is a perennial herb that only a few individuals grow at 10 locations in islands of Shinan area of Jeollanam-do. This species is found in grasslands and around forests. The species is assessed as VU B2ab(iii,iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Menyanthes trifoliata Linnaeus

Asterales: Menyanthaceae

Menyanthes trifoliata is an emergent aquatic plant that about 300 individuals grow only in Gangwon-do. This species is found in stream sides and wetlands. The species is assessed as VU A2ac; B2ab(iii,iv). Destruction of natural habitats by wetland development may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Apocynum lancifolium Russanov

Gentianales: Apocynaceae

Apocynum lancifolium is a perennial herb that grows along the western coastal line and at the Danyang area in Chungcheongbuk-do. This species is found at moist habitats such as rural roads, dikes, and tidelands. The species is assessed as VU B2b(iii)c(iii). Natural habitat interference by human life and water or foreshore pollution may be threatening this species. There are currently no regional conservation measures.

Halenia corniculata (Linnaeus) Cornaz

Gentianales: Gentianaceae

Halenia corniculata is an annual or biennial herb that about 300 individuals in 5 populations occur in Gangwon-do and Gyeonggi-do. All the populations of Mt. Seorak in Gangwon-do and Mt. Halla in Jeju-do have been extirpated. This species is found in grasslands of tall mountains. The species is assessed as VU B2ab(iii,vi,v). Road construction and illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Pterygocalyx volubilis Maximowicz

Gentianales: Gentianaceae

Pterygocalyx volubilis is a perennial vine plant that grows only at 10 locations in Gangwon-do. This species is found around upland edges at the foot of mountains and in *Miscanthus sinensis* fields. The species is assessed as VU B2ab(iii). Destruction of natural habitats by human interference may be threatening this species. There are currently no regional conservation measures.

Swertia wilfordii A. Kerner

Gentianales: Gentianaceae

Swertia wilfordii is a biennial herb that grows only in Gangwon-do and Gyeongsangbuk-do. This species is found on mountain slopes. The species is assessed as VU B2ab(iii). Natural habitat interference by climbers may be threatening this species. There are currently no regional conservation measures.

Elsholtzia angustifolia (Loesener) Kitagawa

Lamiales: Lamiaceae

Elsholtzia angustifolia is an annual herb endemic to Korea that grows only at 10 locations in Chungcheongbuk-do and Gyeongsangbuk-do. This species is found sparsely in rocky mountains. The species is assessed as VU B2ab(iv). Indiscriminate collection for its beautiful flowers may be threatening this species. There are currently no regional conservation measures.

Utricularia pilosa (Makino) Makino

Lamiales: Lentibulariaceae

Utricularia pilosa is a floating annual or perennial herb that grows only at 3 locations in Gangwon-do, Gyeongsangbuk-do, and Gyeongsangnam-do. This species is found in coastal wetlands, swamps, and rice fields. The species is assessed as VU B2ab(ii,iii,iv). Development and reclamation of wetlands may be threatening this species. There are currently no regional conservation measures.

Utricularia yakusimensis Masamune

Lamiales: Lentibulariaceae

Utricularia yakusimensis is a perennial herb that grows in Gyeongsangnam-do, Jeollanam-do, and Jeju-do. This species is found around valleys and in mountainous wetlands. The species is assessed as VU B2bc(ii,iii,iv). Wetland development and illegal collection may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Abeliophyllum distichum Nakai

Lamiales: Oleaceae

Abeliophyllum distichum is a deciduous shrub endemic to Korea that grows isolated at Goesan, Jincheon and Yeongdong areas in Chungcheongbuk-do, and Jeollabuk-do. This species is found at stony or sandy areas at the foot of mountains at 50-160 m above sea level. The species is assessed as VU B12ab(iii,v). Low genetic diversity and illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Forsythia ovata Nakai

Lamiales: Oleaceae

Forsythia ovata is a deciduous shrub endemic to Korea that grows only at 10 locations in Gangwon-do and Gyeongsangbuk-do. This species is found in small numbers at sunny rocky areas and on steep cliffs. The species is assessed as VU B2ab(iii,iv). Competition with other plants may be threatening this species. There are currently no regional conservation measures.

Forsythia saxatilis (Nakai) Nakai

Lamiales: Oleaceae

Forsythia saxatilis is a deciduous shrub endemic to Korea that grows throughout the north central areas of Korea. The populations of Mt. Gwanak in Seoul have been extirpated. This species is found at sunny habitats at the foot of mountains. The species is assessed as VU B2ab(iv); C2a(i). Natural habitat interference by climbers may be threatening this species. There are currently no regional conservation measures.

Osmanthus insularis Koidzumi

Lamiales: Oleaceae

Osmanthus insularis is an indeciduous tree that about 1,000 individuals at most grow only at Geomun and Bogil Islands in Jeollanam-do, and Jeju-do. One or only a few individuals comprise small populations. This species is found at sunny stony areas in mountainous forests. The species is assessed as VU B2ab(iii); C2a(i). Destruction of natural habitats by road construction may be threatening this species. There are currently no regional conservation measures.

Trapella sinensis Oliver var. *antennifera* (H. Léveillé) H. Hara

Lamiales: Pedaliaceae

Trapella sinensis var. *antennifera* is a floating annual aquatic plant that about 10 populations occur at the southern areas except Jeju-do. This species is found at lentic streams, waterways, and around old reservoirs and swamps. The species is assessed as VU B2ab(iii,iv). Refurbishment of streams and waterways may be threatening this species. There are currently no regional conservation measures.

Euphrasia coreana W. Becker

Lamiales: Scrophulariaceae

Euphrasia coreana is an annual herb endemic to Korea that only a few individuals grow at 10 locations in Jeju-do. This species is found in sunny grasslands over 1,500 m above sea level. The species is assessed as VU B2ab(iii,iv). Competition with other plants may be threatening this species. There are currently no regional conservation measures.

Limnophila aromatica (Lamarck) Merrill

Lamiales: Scrophulariaceae

Limnophila aromatica is an annual and emergent aquatic plant that only about 5 populations occur in Jeju-do and Busan. The range of natural habitats is very narrow and estimated number of individuals is very small. This species is found in wetlands, rice fields, and levees. The species is assessed as VU B2ab(ii,iii,iv,v). Collapse of natural habitats in wetlands and rice fields may be threatening this species. There are currently no regional conservation measures.

Pedicularis ishidoyana Koidzumi and Ohwi

Lamiales: Scrophulariaceae

Pedicularis ishidoyana is a perennial herb that grows at about 10 locations in Gangwon-do, Gyeonggi-do, Gyeongsangbuk-do, and Gyeongsangnam-do. The largest subpopulation appears comprising about 1,000 individuals, but other populations with about 30 to 50 ones. This species is found in cool valleys with much water flows and on shady mountain slopes. The species is assessed as VU B2ab(iii); C2a(i). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Pseudostellaria sylvatica (Maximowicz) Pax

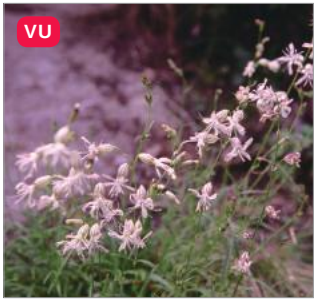
Caryophyllales: Caryophyllaceae

Pseudostellaria sylvatica is a perennial herb that only a few individuals grow at 10 locations of Mt. Seorak in Gangwon-do. This species is found in forests and moist highlands over 1,000 m above sea level. The species is assessed as VU B2ab(iii). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Silene capitata Komarov

Caryophyllales: Caryophyllaceae

Silene capitata is a perennial herb that only grows at the Yeongwol, Cheolwon, and Hongcheon areas in Gangwon-do, and the Yeoncheon area in Gyeonggi-do. This species is found on rocks in sunny habitats. The species is assessed as VU B2ab(v). Illegal collection for its unusal inflorescence may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.



Silene jenisseensis Willdenow

Caryophyllales: Caryophyllaceae

Silene jenisseensis is a perennial herb that grows only in Gangwon-do. This species is found at grasslands on sunny mountain ridges, at dry sands, and between rocks around forests. The species is assessed as VU B2ab(iii). Indiscriminate collection for ornamental use and damage of natural habitats due to the location near hiking trails may be threatening this species. There are currently no regional conservation measures.

Drosera peltata Thunberg var. *nipponica* (Masamune) Ohwi ex. E.H. Walker

Caryophyllales:Droseraceae

Drosera peltata var. *nipponica* is an insectivorous plant that only a few individuals grow along the coast of Jeollanam-do. This species is found in groups in sunny wetlands of low mountains along the coast. The species is assessed as VU B2ab(iii,iv). Destruction of natural habitats and illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Polygonum amphibium Linnaeus

Caryophyllales: Polygonaceae

Polygonum amphibium is a perennial herb that grows in Gyeonggi-do, Gyeongsangbuk-do, and Gyeongsangnam-do. This species is found around old reservoirs and small ponds. The species is assessed as VU B2ab(iii,iv). Refurbishment and reclamation of reservoirs may be threatening this species. There are currently no regional conservation measures.

Actinidia rufa (Siebold and Zuccarini) Planchon ex Miquel

Ericales: Actinidiaceae

Actinidia rufa is a deciduous vine plant that only a few individuals grow along the coast of Jeollanam-do and Jeju-do. This species is found in rocky areas. The species is assessed as VU B2ab(v). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Impatiens furcillata Hemsley

Ericales: Balsaminaceae

Impatiens furcillata is an annual herb that grows at 10 locations along the southern coastal line. This species is found in groups at watery habitats around valleys. The species is assessed as VU B2ab(iii). Natural habitat interference by human access may be threatening this species. There are currently no regional conservation measures.

Arctous rubra (Rehder and E. H. Wilson) Nakai

Ericales: Ericaceae

Arctous rubra is a small shrub that about 500 individuals grow only at Mt. Seorak and Ongnyeobong in Gangwon-do. This species is found in highland rocky areas and in shrubberies. The species is assessed as VU B2ab(iii). Destruction of natural habitats by construction of hiking trails may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Empetrum nigrum Linnaeus var. *japonicum* Siebold and Zuccarini ex K. Koch

Ericales: Ericaceae

Empetrum nigrum var. *japonicum* is a small indeciduous shrub that grows only at 10 locations in Jeju-do. This species is found in sunny habitats over 1,400 m above sea level. The species is assessed as VU A2c; B2ab(iii). Apart from the competition with *Sasa borealis*, natural habitat interference by climbers may be threatening this species. There are currently no regional conservation measures.

Pyrola renifolia Maximowicz

Ericales: Ericaceae

Pyrola renifolia is an indeciduous perennial herb that only about 2 to 3 populations occur in Ulleung Island of Gyeongsangbuk-do. This species is found in shady forests. The species is assessed as VU B2ab(iii). Destruction of natural habitats by road construction may be threatening this species. There are currently no regional conservation measures.

Vaccinium uliginosum Linnaeus

Ericales: Ericaceae

Vaccinium uliginosum is a small shrub that grows only at Mt. Seorak in Gangwon-do and Mt. Halla in Jeju-do. This species is found at mountain peaks with strong wind and prominent bedrocks. The species is assessed as VU B2ab(iii,iv). Collapse of natural habitats by strong wind may be threatening this species. There are currently no regional conservation measures.

Vaccinium vitis-idaea Linnaeus

Ericales: Ericaceae

Vaccinium vitis-idaea is an indeciduous shrub that only 2 populations occur at Mt. Seorak in Gangwon-do. The species is found on bedrocks around the peak of mountains. The species is assessed as VU B2ab(iii,iv). Collapse of natural habitats by rock erosion may be threatening this species. There are currently no regional conservation measures.

Glaux maritima Linnaeus var. *obtusifolia* Fernald

Ericales: Primulaceae

Glaux maritima var. *obtusifolia* is a perennial herb that about 2,000 individuals grow only at the Pohang area in Gyeongsangbuk-do and Ulsan. The natural habitats of this species at the Sokcho area in Gangwon-do are disappeared. This species is found in brackish water zones and in coastal wetlands. The species is assessed as VU B2ab(iii). Destruction of natural habitats by garbage abandonment may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Trientalis europaea Linnaeus subsp. *arctica* (Fischer ex Hooker) Hultén

Ericales: Primulaceae

Trientalis europaea subsp. *arctica* is a perennial herb that grows at Mt. Seorak in Gangwon-do, Gyeongsangbuk-do, and Gyeongsangnam-do. The estimated number of individuals at Mt. Seorak in Gangwon-do comprises more than 7,000. This species is found in rocky shrubberies. The species is assessed as VU B2ab(iii). Natural habitat interference by climbers may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Hibiscus hamabo Siebold and Zuccarini

Malvales: Malvaceae

Hibiscus hamabo is a small shrub that grows only at 5 locations in Wan Island of Jeollanam-do and Jeju-do. However, wild populations in Wando have been extirpated except restored individuals. The estimated total is less than 1,000 individuals including restored individuals. The largest population comprises only about 300 individuals. This species is found along the lava coast with succulent plants and vine plants. The species is assessed as VU B2ab(iii,iv); C2a(i). Destruction of natural habitats by costal road construction may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Daphne pseudomezereum A. Gray var. *koreana* (Nakai) Hamaya

Malvales: Thymelaeaceae

Daphne pseudomezereum var. *koreana* is a shrub that grows at about 15 locations in Gangwon-do, Gyeongsangbuk-do, Gyeongsangnam-do, and Jeollabuk-do. The extent of occurrence (EOO) of the species was calculated as 2,400 km^2. This species is found at shady and moist habitats with rich humus and drained soil in tall mountains. The species is assessed as VU B12a. There are currently no regional conservation measures.

Diarthron linifolium Turczaninow

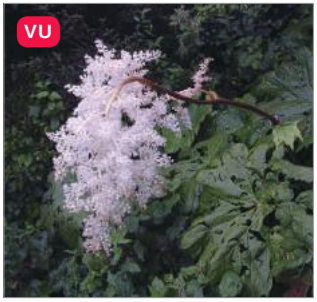
Malvales: Thymelaeaceae

Diarthron linifolium is a perennial herb that grows only at limestone areas in the Yeongwol and Pyeongchang areas of Gangwon-do and the Danyang area in Cheongchungbuk-do. The number of natural habitats and individuals are small. This species is found on gravels or dry sands of low mountains in limestone areas. The species is assessed as VU B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Tillaea aquatica Linnaeus

Saxifragales: Crassulaceae

Tillaea aquatica is an annual herb that was previously known from Seoul and Daegu. Several populations have been found in Jeju-do and Busan in recent years and the populations in Busan comprises about 300 individuals. This species is found at sands and watery soils around rivers. The species is assessed as VU B2ab(iii). Wetland development may be threatening this species. There are currently no regional conservation measures.



Astilboides tabularis (Hemsley) Engler

Saxifragales: Saxifragaceae

Astilboides tabularis is a perennial herb that grows only in Gangwon-do. This species is mainly found in groups on mountain slopes, in shady habitats, and in limestone areas with fertile soil. The species is assessed as VU B2ab(iii,v). Rootstalk damage by rainfall and indiscriminate collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Quercus gilva Blume

Fagales: Fagaceae

Quercus gilva is an indeciduous tree that grows only at southern coastal areas in Gyeongsangnam-do, Jeollabuk-do, Jeollanam-do, and Jeju-do. The natural habitats are fragmented and number of young individuals is very small. This species is found in indeciduous lowland forests at 75-350 m above sea level and at rocky areas with barren soil. The species is assessed as VU B2ab(iii,v); C2a(i). Damage of natural habitats and competition with other trees may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Lycoris sanguinea Maximowicz var. *koreana* (Nakai) T. Koyama

Asparagales: Amarylidaceae

Lycoris sanguinea var. *koreana* is a perennial herb that about 10 populations occur along the coast of Jeollabuk-do and Jeollanam-do, and at some locations in inland. The populations in Mt. Naejang in Jeollabuk-do comprise about 2,400 individuals. This species is found in valleys and on mountain slopes at 250-450 m above sea level. The species is assessed as VU B2ab(iii). Natural habitat interference by climbers and indiscriminate collection for ornamental use may be threatening this species. There are no regional conservation measures currently.

Iris koreana Nakai

Asparagales: Iridaceae

Iris koreana is a perennial herb endemic to Korea that grows only at 10 locations in Cheongchungbuk-do, Jeollabuk-do, and Jeollanam-do. About 600 individuals grow at Mt. Naejang in Jeollabuk-do. This species is found at lower places on mountain slopes, around forests and valleys. The species is assessed as VU B2ab(iii); C2a(i). Natural habitat interference by climbers and illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Iris laevigata Fischer

Asparagales: Iridaceae

Iris laevigata is a perennial herb that grows only at the Goseong area in Gangwon-do and Mt. Jiri in Jeollanam-do. However, there is a controversy about existence of populations of Mt. Jiri. The populations in Gangwon-do are under danger of habitat degradation. This species is found at ponds and hills of streams. The species is assessed as VU B2ab(iii). Destruction of natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Iris ruthenica Ker Gawler

Asparagales: Iridaceae

Iris ruthenica is a perennial herb that grows in Gangwon-do, Gyeonggi-do, and Cheongchungnam-do. This species is found in grasslands, hilllocks, lowland *Pinus densiflora* forests, and on sunny sands. The species is assessed as VU A2cd. Various developments may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Bulbophyllum drymoglossum Maximowicz ex M. Okubo

Asparagales: Orchidaceae

Bulbophyllum drymoglossum is an indeciduous perennial herb that about 1,000 individuals in 10 to 15 populations grow along the south coast including Jeju-do. Some populations have been extirpated within its natural habitats. This species is found on rocks and mature trees. The species is assessed as VU D(1). Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Bulbophyllum inconspicuum Maximowicz

Asparagales: Orchidaceae

Bulbophyllum inconspicuum is an epiphytic orchid that only a few individuals grow in Gyeongsangnam-do and Jeju-do. This species is found in moist forests and on rocks. The species is assessed as VU B1ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Calanthe reflexa Maximowicz

Asparagales: Orchidaceae

Calanthe reflexa is an indeciduous perennial herb that grows at about 10 locations in Gangwon-do and Jeju-do. This species is found at lower places in forests. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Calanthe striata R. Brown ex Lindley for. *sieboldii* (Decaisne ex Regel) Ohwi

Asparagales: Orchidaceae

Calanthe striata for. *sieboldii* is an indeciduous perennial herb that grows only at several locations in Jeollanam-do and Jeju-do. The populations previously known from Ulleung Island of Gyeongsangbuk-do may be almost extirpated. This species is found in half-shaded deciduous forests in warm areas. The species is assessed as VU B2ab(v). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Cephalanthera erecta (Thunberg) Blume for. *subaphylla* (Miyabe and Kudô) M. Hiroe

Asparagales: Orchidaceae

Cephalanthera erecta for. *subaphylla* is a perennial herb that only a few individuals grows in about 10 locations throughout Korea. This species is found between shrubs in shady mountains. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Cyrtosia septentrionalis (H.G. Reichenbach) Garay

Asparagales: Orchidaceae

Cyrtosia septentrionalis is a perennial herb that grows in Cheongchungnam-do, Jeollabuk-do, Jeollanam-do, and Jeju-do. The largest population comprises less than 150 individuals. This species is found in forests with rich humus at 300-1,000 m above sea level and at flatlands in shallow valleys. The species is assessed as VU C2a(i). Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Goodyera repens (Linnaeus) R. Brown

Asparagales: Orchidaceae

Goodyera repens is a perennial herb that only about 10 populations occur throughout Korea. This species is found in mountains with rich humus over 900 m above sea level. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Gymnadenia conopsea (Linnaeus) R. Brown

Asparagales: Orchidaceae

Gymnadenia conopsea is a perennial herb that grows only at 5 locations in Gyeonggi-do and Jeju-do. The estimated number of individuals is very small. This species is found in sunny grasslands of tall mountains. The species is assessed as VU B2ab(iv). Overall number of populations is declining. There are currently no regional conservation measures.

Liparis nervosa (Thunberg) Lindley

Asparagales: Orchidaceae

Liparis nervosa is an indeciduous perennial herb that was previously known from Jeollanam-do and Jeju-do. However, populations in Jeollanam-do have been extirpated within its natural habitats. This species is found in lowland forests. The species is assessed as VU B12ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Malaxis monophyllos (Linnaeus) Swartz

Asparagales: Orchidaceae

Malaxis monophyllos is a perennial herb that grows only at 5 locations in Gangwon-do. The estimated number of individuals is small. This species is found in shady mountainous forests. The species is assessed as VU B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Neottianthe cucullata (Linnaeus) Schlechter

Asparagales: Orchidaceae

Neottianthe cucullata is a perennial herb that only a few individuals grow at 5 locations at Mt. Hambaek in Gangwon-do, Mt. Gaya in Gyeongsangnam-do, Mt. Deogyu in Jeollabuk-do, and Mt. Jiri in Jeollanam-do. This species is found in grasslands of tall mountains and at lower places in coniferous forests. The species is assessed as VU B2ab(iv); C2a(i). Illegal collection for ornamental use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Plagiogyria japonica Nakai

Cyatheales: Plagiogyriaceae

Plagiogyria japonica is an indeciduous fern that only about 5 populations occur in Jeju-do. This species is found on valley slopes in indeciduous broadleaf forests and around marshes. The species is assessed as VU B2ab(iii,iv). Collapse of natural habitats by soil erosion and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Isoetes coreana Y.H. Chung and H.K. Choi

Isoetales: Isoetaceae

Isoetes coreana is a hydrophyte endemic to Korea that grows at about 10 locations in Gangwon-do, Chungcheongbuk-do, Gyeongsangnam-do, and Jeollanam-do. The estimated total is less than 10,000 individuals, but the number and size of populations are variable as the water level changes. This species is submerged in the water with sandy soil. The species is assessed as VU B2ac(v): C2(b). Destruction of natural habitats by development work on rivers and reservoirs may be threatening this species. There are currently no regional conservation measures.

Huperzia selago (Linnaeus) Bernhardi ex Schrank and Martius

Lycopodiales: Lycopodiaceae

Huperzia selago is an indeciduous fern that only a few individuals grow at Mt. Seorak in Gangwon-do. Several individuals were introduced in Ulleung Island of Gyeongsangbuk-do in recent years. This species is found in sunny forests and grasslands of tall mountains. The species is assessed as VU B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Lycopodium annotinum Linnaeus

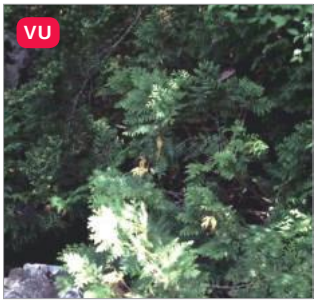
Lycopodiales: Lycopodiaceae

Lycopodium annotinum is an indeciduous fern that grows only at 5 locations in Gangwon-do. The species is found in shady forests of tall mountains. The species is assessed as VU B2ab(iv). Indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Juniperus chinensis Linnaeus

Pinales: Cupressaceae

Juniperus chinensis is an indeciduous tree that grows at Dong River and coastal areas of Gangwon-do, Ulleung Island of Gyeongsangbuk-do, and the east coast of Korea. The estimated total is about 200 individuals in Dong River, 1,000 ones in Ulleung Island, and 500 ones in the east coast. This species is found on riverine or coastal cliffs. The species is assessed as VU B2ab(iii,iv,v). Apart from the difficulty in growth on steep cliffs, indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.



Thuja koraiensis Nakai

Pinales: Cupressaceae

Thuja koraiensis is a tree endemic to Korea that grows only in Gangwon-do and northeast parts of Gyeonggi-do. The area of occupancy (AOO) of the species was calculated as 2,000 km^2. Mature individuals are scarce. This species is found at graves in mountainous forests at 750-1,950 m above sea level. The species is assessed as VU B2ab(ii,iii,vi,v); C2a(i); D1. Natural habitats in North Korea may be destroyed by logging. There are currently no regional conservation measures.

Picea jezoensis (Siebold and Zuccarini) Carrière

Pinales: Pinaceae

Picea jezoensis is an indeciduous tree that grows at Mt. Gyebang in Gangwon-do, Mt. Deogyu in Jeollabuk-do, and Mt. Jiri in Jeollanam-do. This species is found in tall mountains over 1,000 m above sea level. The species is assessed as VU B2ab(iii). Global warming may be threatening this species. There are currently no regional conservation measures.

Pinus pumila (Pall.) Regel

Pinales: Pinaceae

Pinus pumila is an indeciduous shrub that grows only at 5 locations in Gangwon-do. The species is found in subalpine zones with a light breeze and a lot of snow at 900-2,500 m above sea level. The species is assessed as VU B2ab(iii,iv). Decrease of environmental adaptation by low genetic diversity may be threatening this species. There are currently no regional conservation measures.

Asplenium prolongatum Hooker

Polypodiales: Aspleniaceae

Asplenium prolongatum is an indeciduous perennial herb that only about 5 subpopulations occur in Jeju-do. This species is found on moist rocks in indeciduous broadleaf forests and on valley slopes. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Athyrium sheareri (Baker) Ching

Polypodiales: Athyriaceae

Athyrium sheareri is an indeciduous perennial fern that only a few individuals grow in Gyeongsangnam-do, Jeollanam-do, and Jeju-do. This species is found around partially sunny forests and in mixed forests with indeciduous and deciduous trees. The species is assessed as VU B2ab(iv). Exploration of natural habitats may be threatening this species. There are currently no regional conservation measures.

Athyrium spinulosum (Maximowicz) Milde

Polypodiales: Athyriaceae

Athyrium spinulosum is a summer-green fern that grows only at the Samcheok and Inje areas in Gangwon-do. The extent of occurrence (EOO) of the species is very limited. This species is found at the peak of mountains near hiking trails. The species is assessed as VU B2ab(iii, iv). Damage of natural habitats by people trampling may be threatening this species. There are no regional conservation measures currently.

Deparia okuboana (Makino) M. Kato

Polypodiales: Athyriaceae

Deparia okuboana is a summer-green perennial herb that grows only in Jeju-do. The range of natural habitats is very narrow and estimated number of individuals is very small. This species is found in deciduous broadleaf forests around lowland valleys. The species is assessed as VU B2ab(iii,iv). Destruction of natural habitats by development work may be threatening this species. There are currently no regional conservation measures.

Diplazium hachijoense Nakai

Polypodiales: Athyriaceae

Diplazium hachijoense is an indeciduous perennial fern that only about 5 subpopulations occur in Jeju-do. This species is found on valley slopes in lowlands and annexed islands. The species is assessed as VU B2ab(iii). Collapse of natural habitats may be threatening this species. There are currently no regional conservation measures.

Woodsia glabella R. Brown ex Richardson

Polypodiales: Blechnaceae

Woodsia glabella is a summer-green fern that only a few individuals grow at 5 limestone areas in Gangwon-do. This species is found in rocky areas of tall mountains. The species is assessed as VU B2ab(iii). Exploration of natural habitats may be threatening this species. There are currently no regional conservation measures.

Woodwardia japonica (Linnaeus f.) Smith

Polypodiales: Blechnaceae

Woodwardia japonica is an indeciduous perennial fern that only about 5 populations occur in Jeollanam-do and Jeju-do. This species is found on valley slopes in indeciduous broadleaf forests, especially in *Cryptomeria japonica* plantations. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Dryopteris tokyoensis (Matsum. ex Makino) C. Christensen

Polypodiales: Dryopteridaceae

Dryopteris tokyoensis is a summer-green fern that grows in Gangwon-do, Gyeonggi-do, Chungcheongbuk-do, and Jeollanam-do. This species is found in moist mountainous valleys. The species is assessed as VU B2ab(iv). Overall number of individuals are declining within its natural habitats. There are currently no regional conservation measures.

Loxogramme duclouxii Christ

Polypodiales: Loxogrammaceae

Loxogramme duclouxii is an indeciduous fern that about 5 populations occur only in Jeju-do. This species is found on rocks of valley slopes and depressed areas. The species is assessed as VU B2ab(iv). Illegal collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Loxogramme salicifolia (Makino) Makino

Polypodiales: Loxogrammaceae

Loxogramme salicifolia is an indeciduous fern that grows only at 4 locations in Jeju-do. This species is found on bedrocks in indeciduous broadleaf lowland forests. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are no regional conservation measures currently.

Ceratopteris thalictroides (Linnaeus) Brongniart

Polypodiales: Parkeriaceae

Ceratopteris thalictroides, once considered regionally extinct, is an emergent or submerged annual aquatic plant that abundant individuals grow at 5 areas in Jeollabuk-do, Jeollanam-do, and Busan. This species is found in lentic rice fields, levees, and waterways. The species is assessed as VU B2ab(ii,iii,iv). Reclamation of wetlands may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Crypsinus veitchii (Baker) Copeland

Polypodiales: Polypodiaceae

Crypsinus veitchii is a summer-green perennial herb that grows only at 10 locations in Gyeongsangnam-do and Jeju-do. Most populations are located at some areas in Jeju at about 1,550-1,900 m above sea level. This species is found on valley bedrocks and in highland cliffs. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Cheilanthes chusana Hooker

Polypodiales: Pteridaceae

Cheilanthes chusana is an indeciduous fern that grows only in Gyeongsangnam-do and Jeju-do. The estimated number of individuals is very small. This species is found between stone walls in sunny lowlands. The species is assessed as VU B2ab(iii,iv). Natural habitat interference by human access may be threatening this species. There are currently no regional conservation measures.

Pteris nipponica W.C. Shieh

Polypodiales: Pteridaceae

Pteris nipponica is a perennial fern that only a few individuals grow at 3 locations in Jeju-do. The number of natural habitats and individuals are small. This species is found at cave entrances in lowlands and depressed areas. The species is assessed as VU B2ab(iii,iv). Collapse of natural habitats and indiscriminate collection may be threatening this species. There are currently no regional conservation measures.

Pseudocyclosorus subochthodes (Ching) Ching

Polypodiales: Thelypteridaceae

Pseudocyclosorus subochthodes is an indeciduous fern that grows only at 5 locations in Jeju-do. This species is found on valley slopes and in wetlands near streams. The species is assessed as VU B2ab(iii). Natural habitat interference by river floods may be threatening this species. There are currently no regional conservation measures.

Brasenia schreberi J.F. Gmelin

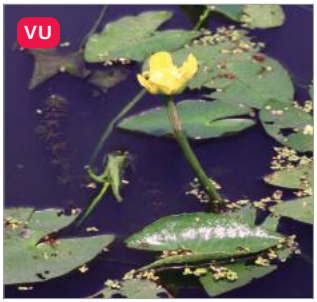
Nymphaeales: Cabombaceae

Brasenia schreberi is a submerged annual aquatic plant that grows throughout Korea. However, inland populations comprise bred individuals. This species is found at old shallow ponds and reservoirs. The species is assessed as VU B2ab(iii,v). Illegal collection for ornamental and edible use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Euryale ferox Salisbury

Nymphaeales: Nymphaeaceae

Euryale ferox is an annual aquatic plant that grows throughout Korea except Gangwon-do and Jeju-do. The estimated total is 5,500 individuals at most. This species is found at shallow swamps and old reservoirs. The species is assessed as VU C2a(i)b. Competition with other hydrophytes and water pollution may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.



Nuphar pumila (Timm) de Candolle var. *pumila*

Nymphaeales: Nymphaeaceae

Nuphar pumila var. *pumila* is a floating perennial aquatic plant that grows in Gyeongsangnam-do, Jeollabuk-do, and Jeollanam-do. This species is found in groups at lentic streams, old ponds, and swamps. The species is assessed as VU B2ab(iii). River refurbishment and water pollution may be threatening this species. There are currently no regional conservation measures.

Nuphar pumila (Timm) de Candolle var. *ozeensis* (Miki) H.Hara

Nymphaeales: Nymphaeaeceae

Nuphar pumila var. *ozeensis* is a submerged perennial aquatic plant that frequently grows throughout Korea except Jeju-do. However, the number of natural habitats is small. This species is found in groups at lentic ponds and puddles. The species is assessed as VU B2ab(iii). Destruction of natural habitats by wetland reclamation may be threatening this species. There are currently no regional conservation measures.

Gymnospermium microrrhynchum (S. Moore) Takhtajan

Ranunculales: Berberidaceae

Gymnospermium microrrhynchum is a perennial herb that grows only in Gangwon-do. This species is found in grasslands of broadleaf and coniferous forests over 1,000 m above sea level. The species is assessed as VU B2ab(iii). Apart from low genetic diversity, destruction of natural habitats by climbers and wild animals may be threatening this species. There are currently no regional conservation measures.

Aconitum austrokoreense Koidzumi

Ranunculales: Ranunculaceae

Aconitum austrokoreense is a perennial herb endemic to Korea that grows at about 10 locations in Gyeongsangbuk-do, Gyeongsangnam-do, and Jeollanam-do. The populations comprise only a few individuals and the largest population appears comprising about 400 individuals. This species is found in stony deciduous broadleaf forests at 200-600 m above sea level. The species is assessed as VU B2ab(iii); C2a(i). Collapse of stony areas within its natural habitats may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Aconitum coreanum (H. Léveillé) Rapaics

Ranunculales: Ranunculaceae

Aconitum coreanum is a perennial herb that grows in central parts of Korea. This species is found at lower places in shrubbery and grasslands at the foot of mountains. The species is assessed as VU A2cd. Illegal collection for medicinal use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Aconitum sibiricum Poiret

Ranunculales: Ranunculaceae

Aconitum sibiricum is a perennial herb that grows only at Gwanmobong and Mt. Hambaek in Gangwon-do. The natural habitats of this species are extremely limited. This species is found in moist deciduous forests and mountain valleys at 900-1,200 m above sea level. The species is assessed as VU B2ab(v). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Anemone flaccida F. Schmidt

Ranunculales: Ranunculaceae

Anemone flaccida is a perennial herb that grows in Jeollabuk-do, Jeollanam-do, and Jeju-do. However, the number of individuals is small except in Jeju-do. This species is found in moist deciduous broadleaf forests at 560 m above sea level. The species is assessed as VU B2ab(iii). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Anemone narcissiflora Linnaeus

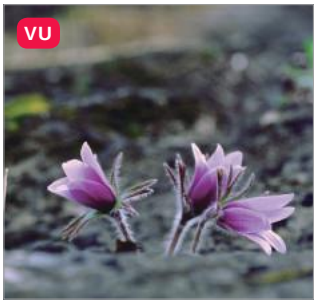
Ranunculales: Ranunculaceae

Anemone narcissiflora is a perennial herb that grows only at Mt. Seorak and Mt. Jeombong in Gangwon-do. This species is found sparsely on mountain ridges, stones, and in grasslands of tall mountains. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Megaleranthis saniculifolia Ohwi

Ranunculales: Ranunculaceae

Megaleranthis saniculifolia is a perennial herb endemic to Korea that widely grows along the Baekdu Mountain Range in Gangwon-do, Cheongchungbuk-do, Gyeongsangbuk-do, Gyeongsangnam-do, Jeollabuk-do, and Jeju-do. This species is found sparsely or in large groups in valleys at 700-1,500 m above sea level. The species is assessed as VU A2cd. Indiscriminate collection for its rarity and ornamental use, and natural habitat interference by climbers may be threatening this species. There are currently no regional conservation measures.



Pulsatilla tongkangensis Y.N. Lee and T.C. Lee

Ranunculales: Ranunculaceae

Pulsatilla tongkangensis is a perennial herb endemic to Korea that about 10,000 individuals in only about 10 populations grow only at limestone areas in Gangwon-do. This species is found between rocks at 200-800 m above sea level. The species is assessed as VU B2ab(iii,iv); C2a(1). Indiscriminate collection for ornamental use may be threatening this species. There are currently no regional conservation measures.

Ranunculus trichophyllus Chaix var. *kadzusensis* (Makino) Wiegleb

Ranunculales: Ranunculaceae

Ranunculus trichophyllus var. *kadzusensis* is an emergent or submerged aquatic plant that about 10 populations occur along the eastern and western coasts. The extent of occurrence (EOO) of the species was calculated as 32,000 km^2. Some populations in Jeju-do and inland areas have been extirpated. This species is found mainly in rice fields, and around lentic waterways and rivers. The species is assessed as VU C2a(ii). Decline of individuals by change of farming methods may be threatening this species. Thes pecies is regionally protected as Endangered Wildlife by the law.

Thalictrum petaloideum Linnaeus

Ranunculales: Ranunculaceae

Thalictrum petaloideum is a perennial herb that grows only at coastal and limestone areas throughout Korea. This species is found around coasts, at low mountains, and in limestone areas near the coast. The species is assessed as VU B2ab(iii). Development of coasts and limestone areas may be threatening this species. There are currently no regional conservation measures.

Thalictrum simplex Linnaeus var. *brevipes* H. Hara

Ranunculales: Ranunculaceae

Thalictrum simplex var. *brevipes* is a perennial herb that only a few individuals grow at 10 locations throughout Korea including Jeju-do. The populations previously known from Gyeonggi-do and Seoul may be almost extirpated. The species is found in sunny mountains and fields. The species is assessed as VU B2ab(iii,iv). Natural habitat interference by climbers may be threatening this species. Indiscriminate collection may be threatening this species.There are currently no regional conservation measures.

Cicuta virosa Linnaeus

Apiales: Apiaceae

Cicuta virosa is a perennial aquatic herb that grows only in Gangwon-do. This species is found in groups around forests, in mountainous wetlands, and at old reservoirs. The species is assessed as VU B2ab(ii,iii,iv). Use of herbicides for agriculture may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Eleutherococcus gracilistylus (W.W. Smith) S.Y. Hu

Apiales: Araliaceae

Eleutherococcus gracilistylus is a creep deciduous shrub that grows only at Mt. Halla in Jeju-do. This species is found along the coasts and in valleys at 1,400 m above sea level or in the forests. The species is assessed as VU B2ab(iii). Despite abundant individuals, indiscriminate collection for medicinal use may be threatening this species. There are currently no regional conservation measures.

Eleutherococcus senticosus (Ruprecht and Maximowicz) Maximowicz

Apiales: Araliaceae

Eleutherococcus senticosus is a shrub that grows throughout the north central areas of Korea. About 50 individuals at 4 locations in Gangwon-do and Gyeongsangbuk-do have been found in recent survey. This species is found at moist and shady places in mountainous valleys and around small valley streams. The species is assessed as VU B2ab(v); C2a(i). Illegal collection for medicinal use may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Oplopanax elatus (Nakai) Nakai

Apiales: Araliaceae

Oplopanax elatus is a deciduous shrub that grows at only about 10 mountainous regions in Gangwon-do and Mt. Jiri in Jeollanam-do. This species is found at stony areas of tall mountains at 1,200-1,500 m above sea level. The species is assessed as VU B12ab(iv). Indiscriminate collection for medicinal use may be threatening this species. There are currently no regional conservation measures.

Deutzia paniculata Nakai

Cornales: Hydrangeaceae

Deutzia paniculata is a deciduous shrub that grows only at 10 locations in Gyeongsangbuk-do and Gyeongsangnam-do. This species is found between rocks in the mountainous valleys or at the foot of mountains. The species is assessed as VU B2ab(iii). Construction or expansion of hiking trails may be threatening this species. There are currently no regional conservation measures.

Albizia kalkora (Roxburgh) Prain

Fabales: Fabaceae

Albizia kalkora is a small tree that grows along the west coast of Cheongchungnam-do and Jeollanam-do. The range of natural habitats is very narrow and estimated number of individuals is very small. This species is found at hillocks around the coast. The species is assessed as VU B2ab(iii,v). Natural habitat interference by developments may be threatening this species. There are currently no regional conservation measures.

Astragalus dahuricus (Pallas) de Candolle

Fabales: Fabaceae

Astragalus dahuricus is a perennial herb that grows isolated in Gangwon-do, Gyeongsangnam-do, and Seoul. The estimated number of individuals is small. This species is found in grasslands of tall mountains. The species is assessed as VU B2ab(iv). Indiscriminate collection for medicinal use may be threatening this species. There are currently no regional conservation measures.

Canavalia lineata (Thunberg) de Candolle

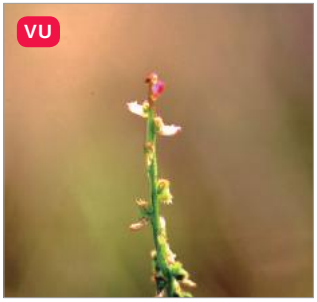
Fabales: Fabaceae

Canavalia lineata is a perennial herb that only a few individuals grow at 10 locations in Jeju-do. This species is found mainly between rocks along the coast. The species is assessed as VU B2ab(iii,iv). Coastal developments may be threatening this species. There are currently no regional conservation measures.

Sophora koreensis Nakai

Fabales: Fabaceae

Sophora koreensis is a deciduous shrub that grows only at 14 locations in Gangwon-do. Some populations may be almost extirpated and comprises only a few individuals. This species is found on lowland slopes at 200-600 m above sea level. The species is assessed as VU B2ab(iv). Indiscriminate collection for ornamental use and military actions may be threatening this species. There are currently no regional conservation measures.



Salomonia oblongifolia de Candolle

Fabales: Polygalaceae

Salomonia oblongifolia is an annual herb that grows only at the Shinan and Gwangyang areas in Jeollanam-do. Three populations have been found in the Gokseong area of Jeollanam-do and Busan in recent years. The estimated number of individuals is about 8,500. This species is found around wetlands in forests and lowlands. The species is assessed as VU B2ab(iv). Severe isolation and blocking of gene flow may be threatening this species. There are no regional conservation measures currently.

Epilobium angustifolium Linnaeus

Myrtales: Onagraceae

Epilobium angustifolium is a perennial herb that grows only at 5 pastures in Gangwon-do. The populations in Mt. Seorak have been extirpated. This species is found at sunny and swampy habitats in tall mountains. The species is assessed as VU B2ab(v). Pasture developments may be threatening this species. There are no regional conservation measures currently.

Epilobium hirsutum Linnaeus

Myrtales: Onagraceae

Epilobium hirsutum is an indeciduous perennial herb that about 3,000 individuals in 4 populations grow in Gangwon-do and Ulleung Island of Gyeongsangbuk-do. This species is found at gravels and moist soils around streams and valleys. The species is assessed as VU B2ab(iii). Destruction of natural habitats by wetland development may be threatening this species. The species is regionally protected as Endangered Wildlife by the law.

Toxicodendron orientale Greene

Sapindales: Anacardiaceae

Toxicodendron orientale is a deciduous vine plant that 20 to 30 individuals in only about 5 populations occur in Geomun and Baek Islands of Jeollanam-do. This species is found on trees and rocks in mountain ridges. The species is assessed as VU B2ab(ii,iii,iv). There are currently no regional conservation measures.

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Annex

1. IUCN Red List Categories

The IUCN uses 11 categories when red-listed species, and of them two categories were used in regional red-listing only (Fig. 2). To make the lists from the various countries easier to read, and to avoid the risk of any confusion of meaning, the IUCN recommend that the English abbreviations of these categories are used, irrespective of the language that is otherwise used. Species assigned to any of the following categories are classified as red lists; Extinct (EX), Extinct in the Wild (EW), Regionally Extinct (RE), Critically Endangered (CR),

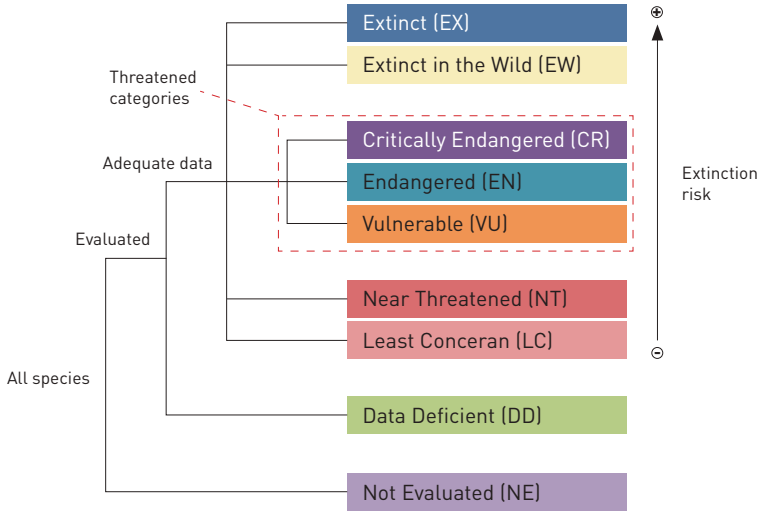

Fig. 2. Structure of the categories

Endangered (ER), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NE), and Not Applicable (NA). Among them, species classified as CR, EN, VU are considered as threatened species, and the categories of RE and NA are used only in regional red lists (Fig. 3).

Extinct (EX) : A taxon is defines as Extinct when there is in no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys of known and/or expected habitat, at appropriate time (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

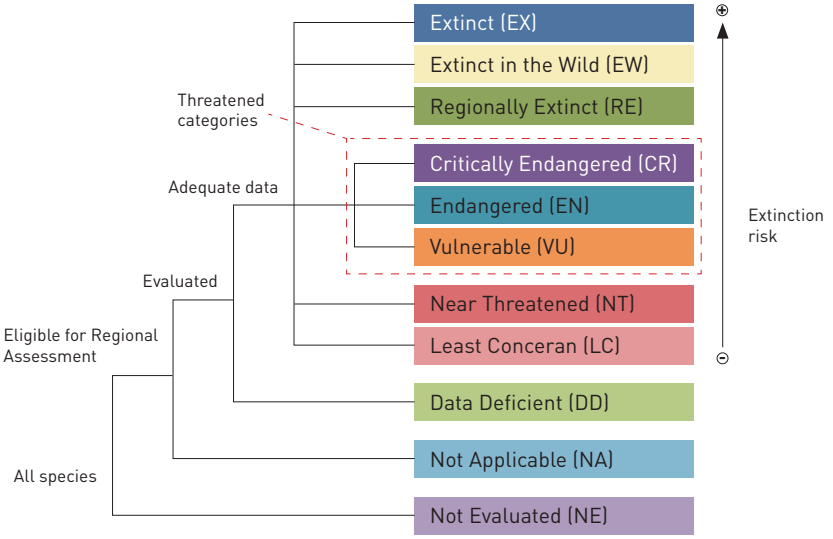

Fig. 3. Structure of the categories at regional level

Extinct in the Wild (EW) : A taxon is defined as Extinct in the Wild when it is known only to survive in cultivation, in capacity, or as a naturalized population (or populations) well outside the previous habitat. A taxon is presumed Extinct in the Wild when exhaustive surveys of known and/or expected habitat, at appropriate time (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

Regionally Extinct (RE) : This category is defined when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died, or has disappeared from the wild in the region, or when, if it is a former visiting taxon, the last individual has died or disappeared in the wild region. The setting of any time limit for listing under RE is left to the discretion of the regional Red List authority, but should not normally pre-date 1500 AD.

Critically Endangered (CR) : A taxon is defined as Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered (see Annex 2), and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered (EN) : A taxon is defined as Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see Annex 2), and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU) : A taxon is defined as Vulnerable when the best available

evidence indicates that it meets any of the criteria A to E for Vulnerable (see Annex 2), and it is therefore considered to be facing a high risk of extinction in the wild.

Near Threatened (NT) : A taxon is defined as Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable now, but is close to qualifying for, or is likely to qualify for a threatened category in the near future.

Least Conceran (LC) : A taxon is defined as Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

Data Deficient (DD) : A taxon is defined as Data Deficient when there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicated that the more information is required and acknowledges the possibility that future research will show that a classification of threatened is inappropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elasped since the last record of the taxon, then a threatened status may well be justified.

Not Evaluated (NE) : A taxon is defined as Not Evaluated when it has not yet been evaluated against the criteria.

Not Applicable (NA) : This category is defined for a taxon deemed to be ineligible for assessment as a regional level. A taxon may be NA because it is not a wild population or not within its natural range in the region, or because it is a vagrant to the region. It may also be NA because it occurs at very low numbers in the region (i.e. when the regional Red List authority has decided to use a "filter" to exclude taxa before the assessment procedure), or the taxon may be classified at a lower taxonomic level (e.g. below the level of species or subspecies) than considered eligible by the regional Red List authority. In contrast to other Red List categories, it is not mandatory to use NA for all taxa to which it applies; but is recommended for taxa where its use is informative.

2. IUCN Red List Criteria

SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).[1]

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.

A2 Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) *[(a) cannot be used for A3]*.

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation *[except A3]*
(b) an index of abundance appropriate to the taxon
(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality
(d) actual or potential levels of exploitation
(e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)

	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

C. Small population size and decline

	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 250	< 2,500	< 10,000
AND at least one of C1 or C2			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(ii) % of mature individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals			

D. Very small or restricted population

	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	D1. < 1,000
D2. *Only applies to the VU category* Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	-	-	D2. typically: AOO < 20 km² or number of locations ≤ 5

E. Quantitative Analysis

	Critically Endangered	Endangered	Vulnerable
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

1 Use of this summary sheet requires full understanding of the *IUCN Red List Categories and Criteria* and *Guidelines for Using the IUCN Red List Categories and Criteria*. Please refer to both documents for explanations of terms and concepts used here.

3. Korean Red List of Endangered Species

1) Mammals

Scientific name	Category	Criterion
Kingdom Animalia		
Phylum Chordata		
Class Mammalia		
Order Artiodactyla		
Familly Bovidae		
Naemorhedus caudatus (Miline-Edwards, 1867)	VU	C2a(i); D1
Familly Cervidae		
Cervus nippon (Temminick, 1838)	EN	B2ab(iv)
Familly Moschidae		
Moschus moschiferus (Linnaeus, 1758)	CR	C2a(i); D1
Order Carnivora		
Familly Canidae		
Canis lupus Linnaeus, 1758	RE	
Vulpes vulpes (Linnaeus, 1758)	EN	A2ad; B2ab(iv); D1
Familly Felidae		
Lynx lynx (Linnaeus, 1758)	RE	
Panthera pardus (Linnaeus, 1758)	RE	
Panthera tigris Linnaeus, 1758	RE	
Prionailurus bengalensis (Kerr, 1792)	VU	A2cd
Familly Mustelidae		
Lutra lutra Linnaeus, 1758	VU	A2c
Martes flavigula (Boddaert, 1785)	VU	A2cd; B2ab(iii,iv)
Mustela nivalis (Linnaeus, 1766)	VU	A2cd; B2ab(iii,iv)
Familly Ursidae		
Ursus thibetanus Cuvier, 1823	EN	C2a(i); D1

Scientific name	Category	Criterion
Order Chiroptera		
Familly Vespertilionidae		
Murina ussuriensis Ognev, 1913	EN	B2ab(iii)
Myotis formosus (Hodgson, 1835)	VU	A2cd; D1
Plecotus auritus (Linnaeus, 1758)	VU	A2cd; D1
Order Pinnipedia		
Familly Otariidae		
Callorhinus ursinus (Linnaeus, 1758)	VU	A2d; B2ab(iv)
Zalophus japonicus Peters, 1866	EX	
Familly Phocidae		
Phoca largha Pallas, 1811	EN	A2ad
Order Rodentia		
Familly Sciuridae		
Pteromys volans Linnaeus, 1759	VU	A2c

2) Birds

Scientific name	Category	Criterion
Kingdom Animalia		
Phylum Chordata		
Class Aves		
Order Anseriformes		
Familly Anatidae		
Anser cygnoides Linnaeus, 1758	EN	A1c
Anser erythropus Linnaeus, 1758	VU	D(1)
Aythya baeri Radde, 1863	EN	D(1)
Branta bernicla Linnaeus, 1758	VU	C2a(i)
Cygnus columbianus Ord, 1815	VU	A1ac
Cygnus cygnus Linnaeus, 1758	VU	B1
Cygnus olor Gmelin, 1789	EN	A1c
Mergus squamatus Gould, 1864	EN	A1c
Tadorna cristata Kuroda, 1917	RE	
Order Charadriiformes		
Familly Alcidae		
Synthliboramphus wumizusume Temminck, 1835	EN	A1a
Family Charadriidae		
Charadrius placidus Gray and Gray, 1863	VU	D(1)
Family Haematopodidae		
Haematopus ostralegus Linnaeus, 1758	VU	A1c
Family Laridae		
Larus relictus Lönnberg, 1931	EN	D(1)
Larus saundersi Swinhoe, 1871	EN	A1ac
Family Scolopacidae		
Eurynorhynchus pygmeus Linnaeus, 1758	CR	D(1)
Numenius madagascariensis Linnaeus, 1766	VU	A1c

Scientific name	Category	Criterion
Tringa guttifer Nordmann, 1835	EN	A1c
Order Ciconiiformes		
Family Ardeidae		
Egretta eulophotes Swinhoe, 1860	EN	A1ac
Gorsachius goisagi Temminck, 1835	EN	D(1)
Ixobrychus eurhythmus Swinhoe, 1873	VU	A1c; D(1)
Family Ciconiidae		
Ciconia nigra Linnaeus, 1758	EN	D(1)
Ciconia boyciana Swinhoe, 1873	EN	A1c
Family Threskiornithidae		
Nipponia nippon Temminck, 1849	RE	
Platalea leucorodia Linnaeus, 1758	VU	A1c
Platalea minor Temminck and Schlegel, 1849	VU	D(1)
Order Columbiformes		
Family Columbidae		
Columba janthina Temminck, 1830	VU	A1ac; D(1)
Order Falconiformes		
Family Accipitridae		
Pandion haliaetus Linneaus, 1758	VU	D(1)
Accipiter gentilis Linnaeus, 1758	VU	D(1)
Accipiter gularis Temminck and Schlegel, 1844	VU	D(1)
Accipiter nisus Linnaeus, 1758	VU	D(1)
Accipiter soloensis Horsfi, 1821	VU	D(1)
Aegypius monachus Linnaeus, 1766	VU	D(1)
Aquila chrysaetos Linnaeus, 1758	EN	D(1)
Aquila clanga Pallas, 1811	VU	A1ac; D(1)
Aquila heliaca Savigny, 1809	VU	A1ac; D(1)

Scientific name	Category	Criterion
Haliaeetus albicilla Linneaus, 1758	VU	D(1)
Haliaeetus pelagicus Pallas, 1811	EN	A1c
Milvus migrans Boddaert, 1783	VU	D(1)
Pernis ptilorhyncus Temminck, 1821	VU	D(1)
Family Falconidae		
Falco subbuteo Linnaeus, 1758	VU	D(1)
Falco peregrinus Tunstall, 1771	VU	D(1)
Order Gruiformes		
Family Gruidae		
Grus japonensis Müller, 1776	EN	B1b(i)
Grus monacha Temminck, 1835	VU	D(1)
Grus vipio Pallas, 1811	EN	B1b(i)
Family Otididae		
Otis tarda Linnaeus, 1758	EN	D(1)
Family Rallidae		
Gallicrex cinerea Gmelin, 1789	VU	D(1)
Order Passeriformes		
Family Alaudidae		
Galerida cristata Linnaeus, 1758	VU	D(1)
Family Emberizidae		
Emberiza aureola Pallas, 1773	VU	A1c
Emberiza sulphurata Temminck and Schlegel, 1848	VU	D(1)
Emberiza yessoensis Swinhoe, 1874	VU	D(1)
Family Monarchidae		
Terpsiphone atrocaudata Eyton, 1839	VU	A1c
Family Pittidae		
Pitta nympha Temminck and Schlegel, 1850	VU	D(1)

Scientific name	Category	Criterion
Family Sylviidae		
Locustella pleskei Taczanowski, 1889	VU	D(1)
Order Piciformes		
Family Picidae		
Dryocopus javensis richardsi Tristan, 1879	RE	
Dryocopus martius Linnaeus, 1758	VU	A1c
Order Strigiformes		
Family Strigidae		
Bubo bubo Linnaeus, 1758	VU	D(1)
Strix aluco Pallas, 1771	VU	A1c
Strix uralensis Pallas, 1771	EN	D(1)

3) Amphibians and Reptiles

Scientific name	Category	Criterion
Kingdom Animalia		
Phylum Chordata		
Class Amphibia		
Order Anura		
Family Hylidae		
Hyla suweonensis Kuramoto, 1980	**EN**	B2ab(iv)
Family Microhylidae		
Kaloula borealis (Barbour, 1908)	**VU**	A2c
Family Ranidae		
Rana plancyi chosenica Okada, 1931	**VU**	B2ab(iii,iv)
Order Caudata		
Family Hynobiidae		
Hynobius yangi Kim, Min and Matsui, 2003	**EN**	B1ab(iii)
Family Plethodontidae		
Karsenia koreana Min et al., 2005	**VU**	C2a(i)
Class Reptilia		
Order Squamata		
Family Colubridae		
Elaphe schrenckii (Strauch, 1873)	**EN**	A1ac
Sibynophis chinensis (Günnther, 1889)	**EN**	D1,2
Family Lacertidae		
Eremias argus Peters, 1869	**EN**	A1ac
Order Testudinata		
Family Testudinidae		
Chinemys reevesii (Gray, 1831)	**VU**	B2ab(ii)
Family Trionychidae		
Pelodiscus sinensis (Wiegmann, 1834)	**VU**	B1ab(i)

4) Fish

Scientific name	Category	Criterion
Kingdom Animalia		
Phylum Chordata		
Class Actinopterygii		
Order Cypriniformes		
Family Cobitidae		
Cobitis choii Kim and Son, 1984	EN	B2ab(i,ii,iii,iv)
Iksookimia pumila (Kim and Lee, 1987)	CR	B2ab(ii,iii); D2
Koreocobitis naktongensis Kim, Park and Nalbant, 2000	EN	B2ab(i,ii,iii,iv)
Family Cyprinidae		
Acheilognathus somjinensis Kim and Kim, 1991	EN	B2ab(i,ii,iii,iv)
Culter brevicauda Güther, 1868	VU	B2ab(i,ii,iii,iv)
Gobiobotia brevibarba Mori, *1935*	VU	B2ab(i,ii,iii,iv)
Gobiobotia macrocephala Mori, 1935	VU	B2ab(i,ii,iii,iv)
Gobiobotia naktongensis Mori, 1935	VU	B2ab(i,ii,iii,iv)
Hemibarbus mylodon (Berg, 1907)	VU	B2ab(i,ii,iii,iv)
Kichulchoia brevifasciata (Kim and Lee, 1996)	EN	B2ab(i,ii,iii,iv)
Microphysogobio koreensis Mori, 1935	EN	B2ab(i,ii,iii,iv)
Microphysogobio rapidus Chae and Yang, 1999	CR	B2ab(i,ii,iii,iv); D2
Phoxinus phoxinus Linnaeus, 1758	EN	B2ab(i,ii,iii,iv)
Pseudopungtungia nigra Mori, 1935	EN	B2ab(i,ii,iii,iv)
Rhodeus pseudosericeus Arai, Jeon and Ueda, 2001	EN	B2ab(i,ii,iii,iv)
Rhynchocypris semotilus (Jordan and Starks, 1905)	CR	D2
Saurogobio dabryi Bleeker, 1871	EN	B2ab(i,ii,iii,iv)
Order Gasterosteiformes		
Family Gasterosteidae		
Pungitius sinensis (Guichenot, 1869)	VU	B2ab(i,ii,iii,iv)
Order Perciformes		

Scientific name	Category	Criterion
Family Centropomidae		
Coreoperca kawamebari Temmink and Schlegel, 1842	EN	B2ab(i,ii,iii,iv)
Family Odontobutidae		
Odontobutis obscura (Temminck and Schlegel, 1845)	CR	D2
Order Salmoniformes		
Family Salmonidae		
Brachimystax lenok tsinlingensis (Li, 1966)	VU	B2ab(i,ii,iii,iv)
Order Scorpaeniformes		
Family Cottidae		
Cottus hangiongensis Mori, 1930	VU	B2ab(i,ii,iii,iv)
Order Siluriformes		
Family Amblycipitidae		
Liobagrus obesus Son, Kim and Choo, 1987	EN	B2ab(i,ii,iii,iv)
Family Bagridae		
Leiocassis longirostris Günther, 1864	RE	
Pseudobagrus brevicorpus Mori, 1936	EN	B2ab(i,ii,iii,iv)
Class Hyperoartia		
Order Petromyzontiformes		
Family Petromyzontidae		
Lethenteron japonicum (Martens, 1868)	EN	B2ab(i,ii,iii,iv)
Lethenteron reissneri (Dybowski, 1869)	VU	B2ab(i,ii,iii,iv)

5) Insects

Scientific name	Category	Criterion
Kingdom Animalia		
Phylum Arthropoda		
Class Insecta		
Order Coleoptera		
Family Aphodiidae		
Aphodius languidulus Schmidt, 1922	VU	A1ac; B1ab(i,iii)
Family Buprestidae		
Chrysochroa coreana Han and Park, 2012	VU	A2acd; B1ab(i,ii,iii)
Family Carabidae		
Abroscelis anchoralis punctatissima Schaum, 1863	EN	A2ac; B1ab(i,iii)
Acoptolabrus changeonleei (Ishikawa and Kim, 1983)	VU	A2d; B1ab(i,ii)
Callytron brevipilosa Horn, 1908	VU	A2ac; B1ab(i,iii)
Cicindela coerulea nitida Lichtenstein, 1797	CR	A2ac; B1b(iii)
Cicindela obliquefasciata Adams, 1817	VU	A2ac; B1ab(i,iii)
Family Cerambycidae		
Acanthocinus aedilis (Linnaeus, 1758)	VU	D1+2
Callipogon relictus Semenov-Tian-Shansky, 1899	CR	A1(a,c); B1,B2(a)
Lamia textor (Linnaeus, 1758)	VU	A2ac; B1ab(i,iii)
Leptepania japonica (Hayashi, 1948)	VU	D1+2
Megaleptura thoracica (Creutzer, 1799)	VU	D1+2
Palimna liturata continentalis (Semenov-Tian-Shansky, 1914)	VU	B1ab(i); D1+2
Rosalia coelestis Semenov-Tian-Shansky, 1911	VU	D1+2
Stenygrinum quadrinotatum Bates, 1873	VU	A2ba; Bab(i,iii)
Family Cetoniidae		
Anthracophora rusticola Burmeister, 1842	VU	A2ac; B1ab(i)
Osmoderma opicum Lewis, 1887	VU	D1+2
Family Dytiscidae		

Scientific name	Category	Criterion
Cybister lewisianus Sharp, 1873	EN	A2ac; B1ab(i,ii)
Dytiscus marginalis czerskii Zaitzev, 1953	VU	B1ab(i,iii); D2
Hydaticus thermonectoides Sharp, 1884	VU	B1ab(i,iii); D2
Family Geotrupidae		
Bolbelasmus coreanus (Kolbe, 1886)	VU	A2ac; B1ab(i,iii)
Family Gyrinidae		
Dineutus orientalis (Modeer, 1776)	VU	A2ac; B1ab(i,iii)
Family Hydrophilidae		
Ametor scabrosus (Horn, 1873)	VU	B1ab(i) + 2ab(ii); D2
Family Lucanidae		
Leptaulax koreanus Nomura, Kon, Johki and Lee, 1993	VU	D1+2
Prosopocoilus astacoides blanchardi (Parry, 1873)	VU	B1ab(i); D1+2
Family Melolonthidae		
Polyphylla laticollis manchurica Semenov, 1900	CR	A2ac; B1ab(i,iii)
Family Scarabaeidae		
Gymnopleurus mopsus (Pallas, 1781)	RE	
Onthophagus gibbulus (Pallas, 1781)	EN	A2ac; B1ab(i,iii)
Onthophagus rugulosus Harold, 1885	VU	A1ac; B1ab(i,iii)
Onthophagus solivagus Harold, 1886	EN	A2ac
Scarabaeus typhon (Fischer-Waldheim, 1923)	CR	A2ac; B1b(i,iii)
Sisyphus schaefferi (Linnaeus, 1758)	CR	A2ac; B1ab(i,iii)
Family Silphidae		
Nicrophorus dauricus Motschulsky, 1860	VU	B1ab(i,iii)
Nicrophorus japonicus Harold, 1877	EN	A2ac
Family Tenebrionidae		
Blaps japonensis Marseul, 1879	CR	B1ab(i,iii) + 2ab(ii,iii)
Order Ephemeroptera		

Scientific name	Category	Criterion
Family Baetidae		
Procloeon halla Bae and Park, 1997	VU	B2ab(i,ii,iii)
Order Lepidoptera		
Family Hesperidae		
Burara striata (Hewitson, 1867)	CR	A1(a,d); B1ab(i); C2a(i)
Carterocephalus dieckmanni Graeser, 1888	EN	A1(a,d)
Hesperia florinda (Butler, 1878)	VU	A1(a,d)
Heteropterus morpheus (Pallas, 1771)	VU	A1(a,d)
Leptalina unicolor (Bremer and Grey, 1853)	EN	A1(a,d); B1ab(i); C2a(i)
Ochlodes similis (Leech, 1893)	VU	A1(a,d)
Ochlodes venatus (Bremer and Grey, 1853)	VU	A1(a,d)
Pyrgus malvae (Linnaeus, 1758)	VU	A1(a,d)
Family Lycaenidae		
Arhopala bazalus (Hewitson, 1862)	EN	A1(a,d); B1ab(i)
Arhopala japonica (Murray, 1875)	EN	A1(a,d); B1ab(i)
Favonius koreanus Kim, 2006	EN	A1(a,d)
Maculinea kurentzovi Sibatani, Saigusa and Hirowatari, 1994	CR	A1(a,d); C2a(i)
Maculinea teleius (Bergsträser, 1779)	VU	A1(a,d); C2a(i)
Neozephyrus japonicus (Murray, 1875)	VU	A1(a,d); B1ab(i)
Plebejus argus (Linnaeus, 1758)	EN	B1ab(i)
Plebejus subsolanus (Eversmann, 1851)	CR	A1(a,d); B1ab(i); C2a(i)
Protantigius superans (Oberthü, 1914)	VU	A1(a,d); B1ab(i)
Satyrium latior (Fixsen, 1887)	EN	A1(a,d)
Satyrium w-album (Knoch, 1782)	VU	A1(a,d)
Shijimaeoides divina (Fixsen, 1887)	CR	A1(a,d); C2a(i)
Shirozua jonasi (Janson, 1877)	EN	A1(a,d); B1ab(i)
Spindasis takanonis (Matsumura, 1906)	VU	A1(a,d)

Scientific name	Category	Criterion
Thecla betulae (Linnaeus, 1758)	VU	A1(a,d)
Family Nymphalidae		
Aglais urticae (Linnaeus, 1758)	VU	A1(a,d)
Pyrgus maculatus (Bremer and Grey, 1853)	VU	
Apatura ilia (Denis and Schiffermüler, 1775)	VU	A1(a,d,e)
Aphantopus hyperantus (Linnaeus, 1758)	VU	A1(a,d)
Argynnis aglaja (Linnaeus, 1758)	EN	A1(a,d)
Argynnis nerippe C. and R. Felder, 1862	VU	A1(a,d)
Argynnis niobe (Linnaeus, 1758)	VU	A1(a,d)
Boloria oscarus (Eversmann, 1844)	VU	A1(a,d)
Boloria perryi (Butler, 1882)	VU	A1(a,d)
Boloria thore (Hüner, 1803)	EN	A1(a,d)
Brenthis daphne (Bergsträser, 1780)	VU	A1(a,d)
Coenonympha amaryllis (Stoll, 1782)	VU	A1(a,d)
Coenonympha hero (Linnaeus, 1761)	VU	A1(a,d); B1ab(i)
Coenonympha oedippus (Fabricius, 1787)	VU	A1(a,d)
Erebia cyclopius (Eversmann, 1844)	VU	A1(a,d)
Erebia wanga Bremer, 1864	VU	A1(a,d)
Euphydryas davidi (Oberthü, 1881)	VU	A1(a,d)
Hipparchia autonoe (Esper, 1783)	EN	A1(a,d); B1ab(i);
Inachis io (Linnaeus, 1758)	VU	A1(a,d,e)
Limenitis homeyeri Tancré, 1881	VU	A1(a,d)
Limenitis populi (Linnaeus, 1758)	VU	A1(a,d)
Melanargia halimede (Méériè, 1858)	VU	A1(a,d)
Melitaea ambigua Méériè, 1859	EN	A1(a,d); C2a(i)
Melitaea britomartis (Assmann, 1847)	CR	A1(a,d);
Melitaea protomedia Méériè, 1859	EN	A1(a,d)

Scientific name	Category	Criterion
Melitaea scotosia Butler, 1878	EN	A1(a,d)
Mimathyma nycteis (Méériè, 1859)	VU	A1(a,d)
Neptis tshetvericovi Kurentzov, 1936	VU	A1(a,d)
Nymphalis antiopa (Linnaeus, 1758)	VU	A1(a,d,e)
Nymphalis l-album (Esper, 1780)	VU	A1(a,d,e)
Nymphalis xanthomelas (Esper, 1781)	VU	A1(a,d,e)
Oeneis mongolica (Oberthü, 1876)	VU	A1(a,d)
Oeneis urda (Eversmann, 1847)	VU	A1(a,d)
Seokia pratti (Leech, 1890)	EN	A1(a,d); C2a(i)
Family Papilionidae		
Parnassius bremeri Bremer, 1864	VU	A1(a,d)
Sericinus montela Gray, 1852	VU	A1(a,d); B1ab(i)
Family Pieridae		
Aporia crataegi (Linnaeus, 1758)	CR	A1(a,d); C2a(i)
Gonepteryx maxima Butler, 1885	VU	A1(a,d); D2
Leptidea amurensis (Méériè, 1859)	VU	A1(a,d)
Order Odonata		
Family Aeshnidae		
Boyeria maclachlani (Selys, 1883)	VU	A2ac; B2ab(ii)
Family Coenagrionidae		
Paracercion plagiosum (Needham, 1930)	VU	B2ab(ii,iii)
Paracercion sieboldii (Selys, 1876)	VU	A2ac; B2ab(ii,iii)
Family Gomphidae		
Asiagomphus coreanus (Doi and Okumura, 1937)	VU	A2ac; B2ab(ii,iii)
Asiagomphus melanopsoides (Doi, 1943)	VU	A2ac
Family Libellulidae		
Libellula angelina Selys, 1883	EN	A2ac; B2ab(ii,iii)

Scientific name	Category	Criterion
Nannophya pygmaea Rambur, 1842	VU	A3cd; B2ba(ii,iii)
Family Macromiidae		
Macromia daimoji Okumura, 1949	EN	A2ca; B2ab(ii,iii)
Order Plecoptera		
Family Scopuridae		
Scopura gaya Jin and Bae, 2005	VU	D2
Scopura jiri Jin and Bae, 2005	VU	D2
Order Trichoptera		
Family Phryganeidae		
Agrypnia pagetana Curtis, 1835	VU	A2ac; B2ab(ii,iii)

6) Mollusks

Scientific name	Category	Criterion
Kingdom Animalia		
Phylum Mollusca		
Class Bivalvia		
Order Unionoida		
Family Unionidae		
Anodonta (*Anemina*) *arcaeformis flavotincta* (v. Martens, 1905)	VU	A1(a,c); B2ab(iii)
Cristaria plicata (Leach, 1815)	VU	A1(a,c); B2ab(iii)
Inversiunio verrusosus Kondo, Yang and Choi, 2007	EN	B1ab(iii)
Lamprotula coreana (v. Martens, 1905)	CR	A1(a,c); B2ab(iii)
Lamprotula leai (Griffith and Pidgeon, 1834)	EN	A1(a,c); B1ab(iii)
Lanceolaria grayana (Lea, 1834)	VU	A1(a,d); B2ab(ii,iii)
Solenaia triangularis (Heude, 1885)	VU	A1(a,d); B2ab(ii,iii)
Order Veneroida		
Familly Corbiculidae		
Corbicula (*Corbicula*) *colorata* (v. Martens, 1905)	VU	B2ab(iii)
Corbicula (*Corbicula*) *fenouilliana* Heude, 1883	EN	A1(a,c); B1ab(i)
Corbicula (*Corbiculina*) *papyracea* Heude, 1883	VU	A1(a,c); B2ab(iii)
Family Sphaeriidae		
Pisidium (*Neopisidium*) *coreanum* Kwon, 1991	VU	A1(a,d); B2ab(iii,v)
Family Veneridae		
Meretrix lamarckii Gray, 1853	VU	A1(a,d); B2ab(iii,v)
Meretrix lusoria (Röing, 1798)	VU	A1(a,d); B2ab(iii,v)
Class Gastropoda		
Family Acanthinulidae		
Zoogenetes harpa (Say, 1824)	VU	B2ab(ii)
Family Alycaeidae		
Chamalycaeus kurodai (Pilsbry and Hirase, 1908)	VU	B2b(i,ii)

Scientific name	Category	Criterion
Family Bradybaenidae		
Aegista (*Aegista*) *chejuensis* (Pilsbry and Hirase, 1908)	VU	B2ab(ii)
Aegista (*Aegista*) *gottschei fusanica* (Pilsbry, 1926)	VU	B2ab(ii)
Aegista (*Aegista*) *proxima* (Pilsbry and Hirase, 1909)	VU	A1(a,c); B2ab(iii)
Aegista (*Aegista*) *pyramidata* (Pilsbry, 1926)	VU	A1(a,c); B2ab(iii)
Aegista (*Aegista*) *pyramidata hebes* (Pilsbry, 1926)	VU	A1(a,c); B2ab(iii)
Aegista (*Aegista*) *tenuissima* (Pilsbry and Hirase, 1908)	VU	A1(a,c); B2ab(iii)
Aegista (*Plectotropis*) *diversa* Kuroda, 1936	VU	A1(a,c); B2ab(iii)
Chosenelix problematica (Pilsbry, 1926)	VU	A1(a,c); B2ab(iii)
Euhadra dixoni (Pilsbry, 1900)	VU	B2ab(ii)
Euhadra herklotsi (v. Martens, 1860)	VU	A1(a,c); B2ab(iii)
Karaftohelix adamsi (Kuroda and Hukuda, 1944)	CR	A1(a,c); B2ab(iii)
Koreanohadra koreana (Pfeiffer, 1846)	EN	A1(a,c); B2ab(iii)
Koreanohadra kurodana (Pilsbry, 1926)	VU	A1(a,c); B2ab(iii)
Lepidopisum verrucosum (Reinhardt, 1877)	VU	A1(a,c); B2ab(iii)
Nesiohelix samarangae Kuroda and Miyanaga, 1943	VU	A1(a,c); B2ab(iii)
Trishoplita ottoi Pilsbry, 1926	VU	A1(a,c); B2ab(iii)
Family Camaenidae		
Satsuma myomphala (Martens, 1865)	CR	A1(a,c); B2ab(iii)
Family Cionellidae		
Cochlicopa lubrica (Müler, 1774)	VU	A1(a,c); B2ab(i,iii)
Family Clausiliidae		
Euphaedusa aculus mokpoensis (Pilsbry and Hirase, 1908)	EN	A1(a,c); B2ab(iii)
Euphaedusa fusaniana uturyotoensis Kuroda and Hukuda, 1944	EN	A1(a,c); B2ab(ii)
Paganizaptyx miyanagai (Kuroda, 1936)	EN	A1(a,c); B2ab(ii)
Paganizaptyx miyanagai ullundoensis Kwon and Lee, 1991	EN	A1(a,c); B2ab(ii)
Reinia variegata (A. Adams, 1868)	EN	A1(a,c); B2ab(ii)

Scientific name	Category	Criterion
Family Cyclophoridae		
Cyclophorus herklotsi v. Martens, 1861	VU	A1(a,c); B2ab(ii)
Cyclotus (*Procyclotus*) *campanulatus* v. Martens, 1865	VU	A1(a,c); B2ab(ii)
Nakadaella micron (Pilsbry, 1900)	VU	A1(a,c); B2ab(ii)
Nobuea elegantistriata Kuroda and Miyanaga, 1943	EN	A1(a,c); B2ab(iii)
Platyraphe minutus quelpartensis (Pilsbry and Hirase, 1908)	VU	A1(a,c); B2ab(ii)
Family Diplommatinidae		
Arinia chejuensis Kwon and Lee, 1991	EN	A1(a,c); B2ab(iii)
Diplommatina (*Sinica*) *kyobuntoensis* Kuroda and Miyanaga, 1943	VU	B2ab(ii)
Diplommatina chejuensis Kwon and Lee, 1991	VU	B2ab(ii)
Family Discidae		
Discus elatior (A. Adams, 1858)	EN	A1(a,c); B2ab(ii)
Discus pauper (Gould, 1859)	VU	B2ab(ii)
Family Ellobiidae		
Ellobium chinense (Pfeiffer, 1954)	VU	A1(a,c); B2ab(ii)
Family Enidae		
Mirus junensis Kwon and Lee, 1991	CR	A1(a,c); B2ab(iii)
Family Fissurellidae		
Tugalina (*Scelidotoma*) *vadososinuata hoonsooi* Choe, Yoon and Habe, 1992	VU	A1(d); B2ab(i,v)
Family Gastrocoptidae		
Gastrocopta (*Sinalbinula*) *jinjiroi* Kuroda and Hukuda, 1944	VU	B2ab(ii)
Family Haliotidae		
Nordotis gigantea Gmelin, 1971	VU	A1(d); B2ab(i,v)
Nordotis madaka Habe, 1979	VU	A1(d); B2ab(i,v)
Family Helixarionidae		
Bekkochlamys quelpartensis (Pilsbry and Hirase, 1908)	VU	B2ab(ii)
Macrochlamys fusanus Hirase, 1908	VU	B2ab(ii)

Scientific name	Korean name	Category	Criterion
Macrochlamys hypostilbe Pilsbry and Hirase, 1909		VU	B2ab(ii)
Parakaliella fusaniana (Pilsbry and Hirase, 1909)		VU	B2ab(ii)
Parakaliella obesiconus (Pilsbry and Hirase, 1909)		VU	B2ab(ii)
Parasitala miyanagai Kuroda and Hukuda, 1944		VU	B2ab(ii)
Sitalina chejuensis Kwon and Lee, 1991		VU	B2ab(ii)
Sitalina circumcincta (Reinhardt, 1883)		VU	B2ab(ii)
Sitalina japonica Habe, 1964		VU	B2ab(ii)
Yamatochlamys lampra (Pilsbry and Hirase, 1904)		VU	B2ab(ii)
Family Neritidae			
Clithon retropictus (v. Martens, 1879)		VU	A1(a,c); B2ab(iii)
Family Pleuroceridae			
Koreanomelania nodifila (v. Martens, 1886)		EN	A1(a,d); B2ab(iii,iv)
Koreoleptoxis globus ovalis Burch and Jung, 1987		VU	A1(a,d); B2ab(iii)
Family Punctidae			
Punctum dageletense Kuroda and Hukuda, 1944		EN	A1(a,c); B2ab(ii)
Punctum depressum Kuroda and Hukuda, 1944		EN	A1(a,c); B2ab(ii)
Family Ranellidae			
Charonia lampas sauliae (Reeve, 1844)		VU	A1(d); B2ab(i,v)
Family Spirostomatidae			
Spirostoma japonicum japonicum (A. Adams, 1867)		VU	A1(a,c); B2ab(ii)
Family Streptaxidae			
Sinoennea iwakawa (Pilsbry, 1900)		EN	A1(a,c); B2ab(ii)
Family Strobilopsidae			
Strobilops (*Eostrobilops*) *coreana* (Pilsbry, 1926)		VU	B2ab(ii)
Strobilops (*Eostrobilops*) *hirasei* (Pilsbry, 1908)		VU	B2ab(ii)
Family Vertiginidae			
Columella edentula (Draparnaud, 1805)		VU	A1(a,c); B2ab(iii)

Scientific name	Korean name	Category	Criterion
Family Viviparidae			
Cipangopaludina japonica (v. Martens, 1860)		EN	B1ab(iii)
Sinotaia quadrata (Benson, 1842)		VU	B2bc(ii,v)
Family Zonitidae			
Retinella radiatula coreana Kwon and Lee, 1991		EN	A1(a,c); B2ab(ii)
Retinella radiatula radiatula (Pilsbry and Hirase, 1904)		EN	A1(a,c); B2ab(ii)
Class Scaphopoda			
Order Dentaliida			
Family Dentaliidae			
Fissidentalium (*Pictodentalium*) *vernedei* (Sowerby, 1860)		VU	B2ab(ii)

7) Vascular plants

Scientific name	Category	Criterion
Kingdom Plantae		
Class Alismatidae		
Order Alismatales		
Family Alismataceae		
Caldesia parnassifolia (Bassi ex Linnaeus) Parlatore	VU	B2ab(iii,iv)
Family Hydrocharitaceae		
Blyxa aubertii Richard	VU	B2ab(ii,iii,iv)
Family Potamogetonaceae		
Potamogeton alpinus Balbis	EN	B2ab(iii,iv)
Potamogeton perfoliatus Linnaeus	VU	A2c; B2ab(iii,iv)
Stuckenia pectinata (Linnaeus) Borner	VU	B2ab(ii,iii,iv)
Family Zosteraceae		
Zostera caespitosa Miki	VU	B2ab(ii,iii)
Zostera geojeensis H. Shin, K.-H. Cho and Y.-S. Oh	EN	B2ab(i,ii,iii)
Zostera japonica Ascherson and Graebner	VU	B2ab(iii,iv)
Class Asteridae		
Order Asterales		
Family Asteraceae		
Anaphalis sinica Hance var. *sinica*	EN	B2ab(iii,iv)
Anaphalis sinica Hance var. *morii* (Nakai) Ohwi	EN	B2ab(iii,iv)
Aster altaicus Willdenow var. *uchiyamae* Kitamura	EN	B2ab(iii)c(iii,iv,v)
Dendranthema coreana (H. Léveillé and Vaniot) Voroschilov	EN	B2ab(iii,iv)
Dendranthema zawadskii (Herbich) Tzvelev var. *lucida* (Nakai) J.H. Pak	EN	B2ab(iii,iv)
Leontopodium hallaisanense Handel-Mazzetti	CR	B2ab(iii,v); C2a(i); D1
Ligularia taquetii (H. Léveillé and Vaniot) Nakai	VU	B2ab(iii,iv)
Saussurea polylepis Nakai	VU	B2ab(iii,iv)
Family Campanulaceae		

Scientific name	Category	Criterion
Adenophora palustris Komarov	EN	B2ab(iii)
Codonopsis minima Nakai	CR	B2ab(v)
Family Menyanthaceae		
Menyanthes trifoliata Linnaeus	VU	A2ac; B2ab(iii,iv)
Nymphoides coreana (H. Léveillé) H. Hara	EN	B2ab(iii)
Order Dipsacales		
Family Caprifoliaceae		
Zabelia tyaihyonii (T.H. Chung ex Nakai) Hisauti and H. Hara	EN	B2ab(iii,v); C2a(i)
Order Gentianales		
Family Apocynaceae		
Amsonia elliptica (Thunberg) Roemer and Schultes	EN	B2ab(iv)
Apocynum lancifolium Russanov	VU	B2b(iii)c(iii)
Cynanchum amplexicaule (Siebold and Zuccarini) Hemsley	EN	B2ab(iii)
Family Gentianaceae		
Gentiana jamesii Hemsley	EN	B2ab(iii,iv)
Halenia corniculata (Linnaeus) Cornaz	VU	B2ab(iii,iv,v)
Pterygocalyx volubilis Maximowicz	VU	B2ab(iii)
Swertia dichotoma Linnaeus	EN	B2ab(iii)c(iv)
Swertia wilfordii A. Kerner	VU	B2ab(iii)
Family Rubiaceae		
Lasianthus japonicus Miquel	EN	B2ab(iii); D1
Order Lamiales		
Family Lamiaceae		
Dysophylla yatabeana (Makino) Press	EN	B2ab(iii,iv)
Elsholtzia angustifolia (Loesener) Kitagawa	VU	B2ab(iv)
Lamium takeshimense Nakai	EN	B2ab(iii,iv); C2a(ii)
Family Lentibulariaceae		

Scientific name	Category	Criterion
Utricularia intermedia Hayne	EN	B2ab(i,ii,iii)
Utricularia pilosa (Makino) Makino	VU	B2ab(ii,iii,iv)
Utricularia yakusimensis Masamune	VU	B2ab(ii,iii,iv)
Family Oleaceae		
Abeliophyllum distichum Nakai	VU	B12ab(iii,v)
Forsythia ovata Nakai	VU	B2ab(iii,iv)
Forsythia saxatilis (Nakai) Nakai	VU	B2ab(iv); C2a(i)
Osmanthus insularis Koidzumi	VU	B2ab(iii); C2a(i)
Family Orobanchaceae		
Orobanche filicicola Nakai ex J.-O. Hyun, Y. Im and H. Shin	EN	B2ab(iii,v); C2a(i)
Family Pedaliaceae		
Trapella sinensis Oliver var. *antennifera* (H. Léveillé) H. Hara	VU	B2ab(iii,iv)
Family Scrophulariaceae		
Centranthera cochinchinensis (Loureiro) Merrill var. *lutea* (H. Hara) H. Hara	EN	B2ab(iii,iv)
Euphrasia coreana W. Becker	VU	B2ab(iii,iv)
Limnophila aromatica (Lamarck) Merrill	VU	B2ab (ii,iii,iv,v)
Limosella aquatica Linnaeus	EN	B2ab(iii,iv)
Pedicularis hallaisanensis Hurusawa	EN	B2ab(iii)
Pedicularis ishidoyana Koidzumi and Ohwi	VU	B2ab(iii); C2a(i)
Pedicularis mandshurica Maximowicz	EN	B2ab(iii)
Pseudolysimachion kiusianum (Furumi) Holub var. *diamantiacum* (Nakai) Y.N. Lee	EN	B2ab(iv)
Scrophularia takesimensis Nakai	EN	A2ac; B2ab (iii,iv); C2a(i)
Class Caryophyllidae		
Order Caryophyllales		
Family Caryophyllaceae		
Lychnis wilfordii (Regel) Maximowicz	EN	B2ab(v)
Pseudostellaria sylvatica (Maximowicz) Pax	VU	B2ab(iii)

Scientific name	Category	Criterion
Silene capitata Komarov	VU	B2ab(v)
Silene fasciculata Nakai	CR	B2ab(iii,v); C2a(i); D1
Silene jenisseensis Willdenow	VU	B2ab(iii)
Family Droseraceae		
Drosera peltata Thunberg var. *nipponica* (Masamune) Ohwi ex. E.H. Walker	VU	B2ab(iii,iv)
Family Phytolaccaceae		
Phytolacca insularis Nakai	EN	C2a(i)
Family Polygonaceae		
Polygonum amphibium Linnaeus	VU	B2ab(iii,iv)
Class Commelinidae		
Order Poales		
Family Cyperaceae		
Carex chordorrhiza Linnaeus f.	EN	B2ab(iii)
Class Dilleniidae		
Order Brassicales		
Family Brassicaceae		
Arabis serrata Franchet var. *hallaisanensis* (Nakai) Ohwi	CR	B2ab(iii,iv)
Order Ericales		
Family Actinidiaceae		
Actinidia rufa (Siebold and Zuccarini) Planchon ex Miquel	VU	B2ab(v)
Family Balsaminaceae		
Impatiens furcillata Hemsley	VU	B2ab(iii)
Family Diapensiaceae		
Diapensia lapponica Linnaeus var. *obovata* F. Schmidt	CR	B2ab(iii)
Family Ericaceae		
Arctous rubra (Rehder and E. H. Wilson) Nakai	VU	B2ab(iii)
Empetrum nigrum Linnaeus var. *japonicum* Siebold and Zuccarini ex K. Koch	VU	A2c; B2ab(iii)

Scientific name	Category	Criterion
Pyrola renifolia Maximowicz	VU	B2ab(iii)
Rhododendron aureum Georgi	EN	B2ab(iii); C2a(i); D1
Vaccinium uliginosum Linnaeus	VU	B2ab(iii,iv)
Vaccinium vitis-idaea Linnaeus	VU	B2ab(iii,iv)
Family Primulaceae		
Androsace cortusifolia Nakai	EN	B2ab(iii,iv)
Glaux maritima Linnaeus var. *obtusifolia* Fernald	VU	B2ab(iii)
Lysimachia leucantha Miquel	EN	B2ab(ii,iii,iv)
Lysimachia pentapetala Bunge	EN	B2ab(iv)
Trientalis europaea Linnaeus subsp. *arctica* (Fischer ex Hooker) Hultén	VU	B2ab(iii)
Order Malpighiales		
Family Clusiaceae		
Hypericum oliganthum Franchet and Savatier	EN	B2ab(iv)
Family Salicaceae		
Salix blinii H. Léveillé	EN	B2ab(iii)
Family Violaceae		
Viola biflora Linnaeus	EN	D1
Viola mirabilis Linnaeus	EN	B2ab(iii); C2a(ii)
Viola raddeana Regel	CR	B2ab(iii); C2a(i); D1
Viola websteri Hemsley	EN	B2ab(iii); C2a(i)
Order Malvales		
Family Malvaceae		
Hibiscus hamabo Siebold and Zuccarini	VU	B2ab(iii,iv); C2a(i)
Family Thymelaeaceae		
Daphne pseudomezereum A. Gray var. *koreana* (Nakai) Hamaya	VU	B12a
Diarthron linifolium Turczaninow	VU	B2ab(iv)
Order Saxifragales		

Scientific name	Category	Criterion
Family Crassulaceae		
Tillaea aquatica Linnaeus	VU	B2ab(iii)
Family Paeoniaceae		
Paeonia obovata Maximowicz	CR	C2a(i)
Family Saxifragaceae		
Astilboides tabularis (Hemsley) Engler	VU	B2ab(iii,v)
Mitella nuda Linnaeus	EN	B2ab(iii)
Class Hamamelidae		
Order Fagales		
Family Fagaceae		
Quercus gilva Blume	VU	B2ab(iii,v); C2a(i)
Order Rosales		
Family Rhamnaceae		
Berchemia floribunda (Wallich) Brongniart	EN	C2a(i); D1
Berchemia racemosa Siebold and Zuccarini	EN	B2ab(iii); C2a(i,ii); D1
Paliurus ramosissimus (Loureiro) Poiret	EN	B2ab(iii); C2a(i)
Rhamnus taquetii (H. Léveillé and Vaniot) H. Léveillé	CR	B2ab(iii,iv)
Family Rosaceae		
Amelanchier asiatica (Siebold and Zuccarini) Endlicher ex Walpers	EN	B2ab(iv)
Cotoneaster wilsonii Nakai	CR	B2ab(ii); C2a(i)
Crataegus komarovii Sargent	EN	B2ab(iii,iv)
Prunus yedoensis Matsumura	EN	B2ab(iv)
Spiraea chartacea Nakai	EN	B2ab(iv)
Spiraea insularis (Nakai) H. Shin, Y.D. Kim and S.H. Oh	CR	B2ab(ii); C2a(i)
Family Urticaceae		
Oreocnide frutescens (Thunberg) Miquel	EN	B2ab(iii,iv)
Class Liliidae		

Scientific name	Category	Criterion
Order Asparagales		
Family Amaryllidaceae		
Lycoris chejuensis K.H. Tae and S.C. Ko	EN	B2ab(iii)
Lycoris chinensis Traub var. *sinuolata* K.H. Tae and S.C. Ko	EN	B2ab(iii); C2a(i)
Lycoris sanguinea Maximowicz var. *koreana* (Nakai) T. Koyama	VU	B2ab(iii)
Family Iridaceae		
Iris dichotoma Pallas	EN	B2ab(v)
Iris koreana Nakai	VU	B2ab(iii); C2a(i)
Iris laevigata Fischer	VU	B2ab(iii)
Iris ruthenica Ker Gawler	VU	A2cd
Iris setosa Pallas ex Link	EN	B2ab(iii)
Family Orchidaceae		
Bulbophyllum drymoglossum Maximowicz ex M. Okubo	VU	B2ab(iv)
Bulbophyllum inconspicuum Maximowicz	VU	B2ab(iv)
Bupleurum latissimum Nakai	EN	B2ab(iii,iv); C2a(ii)
Burmannia championii Thwaites	EN	B2ab(iv)
Burmannia cryptopetala Makino	EN	B2ab(iv)
Calanthe reflexa Maximowicz	VU	B2ab(iv)
Calanthe striata R. Brown ex Lindley for. *sieboldii* (Decaisne ex Regel) Ohwi	VU	B2ab(v)
Cephalanthera erecta (Thunberg) Blume for. *subaphylla* (Miyabe and Kudô) M. Hiroe	VU	B2ab(iv)
Chamaegastrodia shikokiana (Makino) Makino and F. Maekawa	EN	B2ab(iv)
Cleisostoma scolopendrifolium (Makino) Garay	EN	B2ab(iii,iv)c(iii,iv,v)
Cremastra unguiculata (Finet) Finet	CR	B2ab(iii,v)
Cymbidium kanran Makino	CR	A2d; B2ab(iv)
Cymbidium lancifolium Hooker	CR	B2ab(iii); D1
Cymbidium macrorhizon Lindley	EN	A2cd; C2a(i)b
Cypripedium guttatum Swartz	CR	B2ab(iv); C2a(i,ii); D1

Scientific name	Category	Criterion
Cypripedium japonicum Thunberg	CR	C2a(ii)b
Cypripedium macranthos Swartz	EN	A1(d)
Cyrtosia septentrionalis (H.G. Reichenbach) Garay	VU	B2ab(iv); C2a(i)
Dendrobium moniliforme (Linnaeus) Swartz	EN	C2a(i)
Gastrochilus matsuran (Makino) Schlechter	EN	B2ab(iv); C2a(i)
Gastrochilus japonicus (Makino) Schlechter	CR	C2a(i); D1
Goodyera repens (Linnaeus) R. Brown	VU	B2ab(iv)
Gymnadenia conopsea (Linnaeus) R. Brown	VU	B2ab(iv)
Kuhlhasseltia nakaiana (F. Maekawa) Ormerod	CR	A2acd; C2(a)
Lecanorchis japonica Blume	EN	B2ab(iv)
Lecanorchis kiusiana Tuyama	EN	EN B2ab(iii)
Liparis auriculata Blume ex Miquel	EN	EN B2ab(iv)
Liparis nervosa (Thunberg) Lindley	VU	B12ab(iv)
Malaxis monophyllos (Linnaeus) Swartz	VU	B2ab(iv)
Neofinetia falcata (Thunberg) Hu	CR	A1acd; C2a(i)
Neottianthe cucullata (Linnaeus) Schlechter	VU	B2ab(iv); C2a(i)
Oberonia japonica (Maximowicz) Makino	CR	B2ab(v); C2a(i)
Oreorchis coreana Finet	EN	B2ab(iii,iv)
Platanthera minor (Miquel) H.G. Reichenbach	EN	B3ab(iv)
Peristylus densus (Lindley) Santapau and Kapadia	CR	B2ab(v)
Pecteilis radiata (Thunberg) Rafinesque	EN	C2a(i)
Sedirea japonica (H.G. Reichenbach) Garay and H.R. Sweet	CR	A1ad
Thrixspermum japonicum (Miquel) H.G. Reichenbach	EN	B2ab(v); D1
Order Liliales		
Family Liliaceae		
Lilium dauricum Ker Gawler	EN	C2a(i)
Metanarthecium luteoviride Maximowicz	EN	B2ab(iii,v)

Scientific name	Category	Criterion
Trillium tschonoskii Maximowicz	EN	C2a(i)
Zigadenus sibiricus (Linnaeus) A. Gray	CR	B2ab(iii); D1
Class Lycopodiopsida		
Order Cyatheales		
Family Plagiogyriaceae		
Plagiogyria japonica Nakai	VU	B2ab(iii,iv)
Order Isoetales		
Family Isoetaceae		
Isoetes coreana Y.H. Chung and H.K. Choi	VU	B2ac(v); C2(b)
Order Lycopodiales		
Family Lycopodiaceae		
Lycopodium cryptomerianum Maximowicz	EN	B2ab(iii)
Huperzia selago (Linnaeus) Bernhardi ex Schrank and Martius	VU	B2ab(iv)
Lycopodium annotinum Linnaeus	VU	B2ab(iv)
Lycopodium complanatum Linnaeus	EN	B2ab(iv)
Order Ophioglossales		
Family Ophioglossaceae		
Mankyua chejuense B.-Y. Sun, M.H. Kim and C.H. Kim	CR	B1ab(iii)c(v)
Order Pinales		
Family Cupressaceae		
Juniperus chinensis Linnaeus	VU	B2ab(iii,iv,v)
Thuja koraiensis Nakai	VU	B2ab (ii,iii,iv,v); C2a(i); D1
Family Pinaceae		
Abies koreana E. H. Wilson	EN	B2ab(ii,iii,v)
Picea jezoensis (Siebold and Zuccarini) Carrière	VU	B2ab(iii)
Pinus pumila (Pall.) Regel	VU	B2ab(iii,iv)
Order Polypodiales		

Scientific name	Category	Criterion
Family Aspleniaceae		
Asplenium antiquum Makino	EN	B2ab(iii); C2a(i)
Asplenium prolongatum Hooker	VU	B2ab(iv)
Asplenium wrightii Eaton ex Hooker	CR	D1
Family Athyriaceae		
Athyrium sheareri (Baker) Ching	VU	B2ab(iv)
Athyrium spinulosum (Maximowicz) Milde	VU	B2ab(iii,iv)
Deparia okuboana (Makino) M. Kato	VU	B2ab(iii,iv)
Diplazium hachijoense Nakai	VU	B2ab(iii)
Family Blechnaceae		
Woodsia glabella R. Brown ex Richardson	VU	B2ab(iii)
Woodwardia japonica (Linnaeus f.) Smith	VU	B2ab(iv)
Family Dryopteridaceae		
Dryopteris tokyoensis (Matsum. ex Makino) C. Christensen	VU	B2ab(iv)
Family Loxogrammaceae		
Loxogramme duclouxii Christ	VU	B2ab(iv)
Loxogramme salicifolia (Makino) Makino	VU	B2ab(iv)
Family Parkeriaceae		
Ceratopteris thalictroides (Linnaeus) Brongniart	VU	B2ab(ii,iii,iv)
Family Polypodiaceae		
Colysis simplicifrons (H. Christ) Tagawa	EN	B2ab(iv)
Crypsinus veitchii (Baker) Copeland	VU	B2ab(iv)
Microsorum buergerianum (Miquel) Ching	EN	B2ab(iv)
Family Pteridaceae		
Cheilanthes chusana Hooker	VU	B2ab(iii,iv)
Pteris nipponica W.C. Shieh	VU	B2ab(iii,iv)
Family Thelypteridaceae		

Scientific name	Category	Criterion
Pseudocyclosorus subochthodes (Ching) Ching	VU	B2ab(iii)
Order Psilotales		
Family Psilotaceae		
Psilotum nudum (Linnaeus) P. Beauvois	EN	C2a(i)
Order Pteridales		
Family Adiantaceae		
Adiantum capillus-junonis Ruprecht	EN	B2ab(iii)
Order Selaginellales		
Family Selaginellaceae		
Selaginella sibirica (Milde) Hieronymus	EN	B2ab(iv)
Class Magnoliopsida		
Order Chloranthales		
Family Chloranthaceae		
Sarcandra glabra (Thunberg) Nakai	EN	B2ab(iii); C2a(i); D1
Order Magnoliales		
Family Magnoliaceae		
Michelia compressa (Maximowicz) Sargent	EN	C2a(i)
Order Nymphaeales		
Family Cabombaceae		
Brasenia schreberi J.F. Gmelin	VU	B2ab(iii,v)
Family Nymphaeaceae		
Euryale ferox Salisbury	VU	C2a(i)b
Nuphar pumila (Timm) de Candolle var. *pumila*	VU	B2ab(iii)
Nuphar pumila (Timm) de Candolle var. *ozeensis* (Miki) H. Hara	VU	B2ab(iii)
Nymphaea minima Nakai	CR	B2ab(ii,iii,iv)
Order Piperales		
Family Saururaceae		

Scientific name	Category	Criterion
Saururus chinensis (Loureiro) Baillon	EN	B2ab(iii,iv)
Order Ranunculales		
Family Berberidaceae		
Gymnospermium microrrhynchum (S. Moore) Takhtajan	VU	B2ab(iii)
Family Papaveraceae		
Corydalis filistipes Nakai	EN	B2ab(iv)
Family Ranunculaceae		
Aconitum austrokoreense Koidzumi	VU	B2ab(iii); C2a(i)
Aconitum coreanum (H. Léveillé) Rapaics	VU	A2cd
Aconitum sibiricum Poiret	VU	B2ab(v)
Anemone flaccida F. Schmidt	VU	B2ab(iii)
Anemone narcissiflora Linnaeus	VU	B2ab(iv)
Cimicifuga heracleifolia Komarov	EN	B2ab(iv)
Megaleranthis saniculifolia Ohwi	VU	A2cd
Pulsatilla tongkangensis Y.N. Lee and T.C. Lee	VU	B2ab(iii,iv); C2a(i)
Ranunculus trichophyllus Chaix var. *kadzusensis* (Makino) Wiegleb	VU	B12a
Thalictrum coreanum H. Léveillé	EN	B2ab(iv)
Thalictrum petaloideum Linnaeus	VU	B2ab(iii)
Thalictrum simplex Linnaeus var. *brevipes* H. Hara	VU	B2ab(iii,iv)
Class Rosidae		
Order Apiales		
Family Apiaceae		
Cicuta virosa Linnaeus	VU	B2ab(ii,iii,iv)
Pterygopleurum neurophyllum (Maximowicz) Kitagawa	CR	B2ab(iii); C2a(i); D1
Family Araliaceae		
Eleutherococcus gracilistylus (W.W. Smith) S.Y. Hu	VU	B2ab(iii)
Eleutherococcus senticosus (Ruprecht and Maximowicz) Maximowicz	VU	B2ab(v); C2a(i)

Scientific name	Category	Criterion
Oplopanax elatus (Nakai) Nakai	VU	B12ab(iv)
Order Cornales		
Familly Hydrangeaceae		
Deutzia paniculata Nakai	VU	B2ab(iii)
Kirengeshoma koreana Nakai	EN	B1ab(iii)
Order Fabales		
Familly Fabaceae		
Albizia kalkora (Roxburgh) Prain	VU	B2ab(iii)
Astragalus dahuricus (Pallas) de Candolle	VU	B2ab(iv)
Astragalus membranaceus (Fischer) Bunge var. *alpinus* Nakai	CR	B2ab(iii)
Canavalia lineata (Thunberg) de Candolle	VU	B2ab(iii,iv)
Euchresta japonica Hooker f. ex Regel	CR	B2ab(iii); D1
Sophora koreensis Nakai	VU	B2ab(iii,iv)
Familly Polygalaceae		
Salomonia oblongifolia de Candolle	VU	B2ab(iv)
Order Myrtales		
Familly Onagraceae		
Epilobium angustifolium Linnaeus	VU	B2ab(v)
Epilobium hirsutum Linnaeus	VU	B2ab(iii)
Order Sapindales		
Familly Anacardiaceae		
Toxicodendron orientale Greene	VU	B2ab(ii,iii,iv)
Order Zygophyllales		
Familly Zygophyllaceae		
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Korean Red List of Threatened Species

Second Edition

93400
9 788968 111037
ISBN 978-89-6811-103-7