Information Sheet on Ramsar Wetlands (RIS) –
2006-2008 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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DD MM YY | Designation date | Site Reference Number

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2. Date this sheet was completed/updated

May 25, 2007

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3. Country:

Republic of Korea

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4. Name of the Ramsar site

Du-ung Wetland

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5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only)**:**

a) Designation of a new Ramsar site Yes ☑ ; or No ❑

b) Updated information on an existing Ramsar site Yes ❑; or No ☑

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6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged: ❑

or
If the site boundary has changed:
i) the boundary has been delineated more accurately ❑; or
ii) the boundary has been extended ❑; or
iii) the boundary has been restricted** ❑

and/or

If the site area has changed:
i) the area has been measured more accurately ❑; or
ii) the area has been extended ❑; or
iii) the area has been reduced** ❑

** **Important note**: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

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7. Map of site included

a) A map of the site, with clearly delineated boundaries, is included as:

i**) a hard copy** (required for inclusion of site in the Ramsar List): ☑ ;

ii**) an electronic format** (e.g. a JPEG or ArcView image) ☑ ;

iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** ☑ .

b) Describe briefly the type of boundary delineation applied:

The boundary is the same as the existing wetland conservation area.

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8. Geographical coordinates (latitude/longitude)

N 36° 49'
E 126° 11'

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9. General location:

□ Administrative location:
- Sindu-ri, Wonbug-myun, Taean-gun, Chungcheongnam-do

- Du-ung Wetland is situated in the South of Sindu-ri coastal dune

10. Elevation:

10 m at Sea Level (ASL)

11. Area:

6.5 ha

12. Overview:

- Du-ung wetland is located between sand dunes on the coast and mountainous area in rear.
- Due to long weathering, thick soil has been developed in the mountainous area, the site is presenting good condition for settlement of vegetation.
- The number of vascular plants species in the area attain 311, from 69 families, composed in 274 species, 35 varieties and 2 breeds, which is quite high considering the area is a coastal sand dune.
- If species for landscaping and farming were included, the number would even increase significantly. That high number of species is mainly due to the proximity with the hilly area behind the sand dune and to the long history of settlement in the coastal village.
- According to national and local experts, it is also an area where various and rare vegetal and animal species are living and growing,

13. Ramsar Criteria:

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8

14. Justification for the application of each Criterion listed in 11. above:

□ **Criterion 1: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate bio-geographic region.**

■ Located behind a coastal sand dune, the Du-ung area is a topographically unique wetland. Even if it is situated on the seashore it is in fact a fresh water lake, which depends on underground water. That kind of wetland is very rare in Korea due to the long history of reclamation.

□ **Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.**

■ The Korean golden frog (*rana plancyi chosenica*), the narrow-mouthfrog (*kaloula borealis*) and the tiger lezard (*eremias argus*), recognized as endangered species (degree 2) by the Ministry of Environment have been observed in the wetland.

Many Korean rare species(Vulnerable species) are found within the wetland and surrounding areas such as ,*Cynodon dactylon*(Korean name: usan-zandi), *Zoysia macrostachya*(Korean name: wang-zandi), *Ottelia alismoides* (Korean name: mul-zilgyoungyee), *Ceratophyllum demersum* (Korean name: bunga-marum), *Glehnia littoralis* (Korean name: getbangpung), *Nymphoides coreana* (Korean name: zomuriyeongot), *Orobanche coerulescens* (Korean name: chojongyong), *Utricularia japonica* (Korean name: tongbal), *Hedyotis diffusa* (Korean name: beckunpul), *Ixeris repens*(Korean name: getsumbague); *Lycaena dispar* Haworth (Korean name:Kunjuhongbujunnab)

Amphibian and reptiles: ME protected species including *Rana plancyi chosenica* (Eastern golden frog) and boreal digging frog (*Kaloula borealis)* are living within the wetland and are using this

wetland as a breeding and hatching place

Insects: In addition to the insect species which are normally found in coastal sand dune area, many rare species are found in the surrounding areas. They are as follows: butterfly skimmer,Korean name: Nabijamjari (*Rhyothemis fuliginosa*); *small copper Lycaena phlaeas* .

Criterion 3 : A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.

This region has attracted various conservation projects since 2002 including wetland conservation area, natural monuments, and ecosystem conservation area. Plants and insects endemic to the dune and wetland are found in the area, which is known to be inhabited by 311 vegetal species, 8 species of mammals, 39 bird species, 14 species of Amphibian · Reptile, 110 species of terrestrial insects, and 49 species of micro and macro-biological invertebrates. The rich biodiversity in the area should be preserved. Few species are provided here and remaining are found at the annex of the RIS. The species are *Euparatettix insularis* Bey- Bienko , S*ympetrum striolatum imitoides* Bartenef , *Tenodera angustipennis* Saussure , *Eurydema gebleri* Kolenati .

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15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation)**:**

a) biogeographic region: Holarctic Region – Eastern Asiatic Region
Palearctic

b) biogeographic regionalisation scheme (include reference citation):

- Lee, Y.C. and Yim, Y.J. (2002) *Plant Geography*, Kangwon National University Press, 412pp.
- Takhtajan, A. (1986) *Floristic Regions of the World*, University of California Press, 522pp.
- Udvardy, M. D. F. (1975). *A classification of the biogeographical provinces of the world.* IUCN Occasional Paper no. 18. Morges, Switzerland: IUCN.

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16. Physical features of the site:

- Topography : As Sinduri coastal dune has been preserved for a long time, various configurations of the ground exists here. However by the recent modifications of the sedimentary environment distribution area, sand dunes without vegetation, in other words moving dunes, has been gradually decreased. Due to the actual movement of sand and sedimentation, among other formation process , the paleo-dune, formed in the past under the formed dune, is getting exposed in several places.

- Geographical features and origins: The Taean-gun area lies along the west coast of central Korea and comprises the Taean Peninsula in the north and Anmyeon Island to the south. The coastline forms part of the eastern boundary of the Yellow Sea which is a shallow epic continental shelf zone. The Taean coast is tide-dominated, with a tidal range of about 4-6 m and modeling suggests that the tidal regime in the region was established during the early part of the Holocene. The shelf gradient is generally low and, as a result, small vertical changes in sea-level are accompanied by extensive lateral variations in sea inundation. Sandy deposits of aeolian origin are a common

- occurrence along the Taean seashore. In places, the deposits occur as coastal dune structures. Prior

to this study, no absolute dating method had been applied to determine the age of these deposits but traditionally the sediments had been described as products of two distinct depositional episodes.

- Weather: According to data of the Seosan Weather Station for the 30 past years
  - Average annual temperature: 11.8 °C
  - Average coldest temperature (January): -1.9 °C
  - Average hottest temperature(August): 25.0 °C
  - Average annual rainfall: 1232.0 mm
  - Average annual wind speed 2.8m/s

17. Physical features of the catchment area:

- Du Ung Wetland is located on the Northwest of Taean Peninsula, Chungchung Province. It is also surrounded by the low hills(70-120m high) and dunes which is connected to the sand beaches of Yellow Sea

18. Hydrological values:

- This wetland is important in terms of ground water recharge and stabilization of the coastline. The fact that it is a fresh water lake situated on seashore makes it being of especially high value. Even if it is a basin of limited area Du-Ung waterland's high quantity of water is judged to be originated from the undergrounds surrounded by the sand dunes rather than to be from river influx. That possibility permits to estimate a depth a water low of 2m.

19. Wetland Types

a) presence:

Marine/coastal:	**A**	•	**B**	•	**C**	•	**D**	•	**E**	•	**F**	•	**G**	•	**H**	•	**I**	•	**J**	•	**K**	•	**Zk(a)**	
Inland:	**L**	•	**M**	•	**N**	•	**O**	•	**P**	•	**Q**	•	**R**	•	**Sp**	•	**Ss**	•	**Tp**		**Ts**	•	**U**	•	**Va**	•
	Vt	•	**W**	•	**Xf**	•	**Xp**	•	**Y**	•	**Zg**	•	**Zk(b)**													
Human-made:	**1**	•	**2**	•	**3**	•	**4**	•	**5**	•	**6**	•	**7**	•	**8**	•	**9**	•	**Zk(c)**							

b) dominance:

- E: sand shingle beaches
- K: Freshwater lagoons

20. General ecological features:

- According to studies(KyeongWon university 2004), the total number of vascular plants within the sand dune area and wetland amounts to 311 species, which is quite a high number considering the fact this area is a coastal sand dune and a small wetland. If planted and grown species were included, this number would increase significantly.
- The reasons for such the above mentioned high number might be explain by the fact that a long time passes after the dune has been formed, that the area directly contiguous to the mountainous area is quite large and also that it has been used as a human settlement since a quite long time.
- According to depth of water;
  - In deep places are distributed colonies of submerged plants as *ceratophyllum dernasum,* colonies of floating leaved plants as *trada pseudo incisa* or *nymphea tetragona* (water lily)

- In places where the depth of water is lower are distributed colonies of emerged plants like *scirpus fluviatis* (river bulrush), *leersia oryzoides var.japonica*, *scirpus tabernaermontany*, *phragmites communis* (reed)

21. Noteworthy flora:

Typical colonies of dunal flora as *carex kobomugi*, *carex purnila*, *elymus mollis*, *rosa rugosa* (rugosa rose), *vitex rotundifolia*, *imperata cylindrical var. koenigii* (cocoo grass), or small-sized divers day-neutral plants are also distributed

22. Noteworthy fauna:

- Birds: 39 species of birds are found within the coastal area. Dominant species are Fringilla montifringilla, black-tailed gull (*Larus crassirostris*), Korean magpie (*Pica pica serica)* . Within the forest, parrotbill (*Paradoxornis webbiana*), great tit (*Parus major*) , Korean magpie (*Pica pica serica)*, rufous turtle dove (*Streptopelia orientalis)* , brown-eared bulbul (*Hypsipetes amaurotis).*
- Amphibians and reptiles: Within the wetlands, 99 specimens of amphibians and reptiles from 8 orders, 10 suborders and 14 species have been discovered. The dominant species are, for the amphibians, the golden frog (rana plancyi koreana), as found in 2001. Among the reptiles species found in the area, including lizard (*Leiolopisma laterale)* and long tailed lizard *(Takydromus amurensis),* the tiger lizard (*Eremias argus)* can also be qualified as a dominant species.As this groups are using the surrounding swampy places as spawning areas, there is a necessity to preserve completely those places.
- Insects: Insecta in Shindu dune field are divided into 110species, of which Lepidoptera is 38species (32.8%), Coleoptera 25species(21.6%), Orthoptera 13species (11.2%), Hymenoptera 11species (9.5%).
- Bottom Dwelling Invertebrates: 4 class 10 order 24 family 49species are found within the wetland.
- Mammals: Mammals whose inhabitation has be confirmed in Shinduri's sand dune area represents 5 orders,8 families and 8 species, as followed.Talpidae family: Mole (*Talpa wogura coreana)*, Mustelidae family: Siberian mink (*Mustela sibirica coreana),* Leporidae family : Korean hare(*Lepus sinensis coreanus*), Cervidae family: Chinese water deer *(Hydropotes inermis),* Sciuridae family: Korean squirrel *(Sciurus vulgaris),* Muridae family : Black-striped field mouse (*Apodemus agrarius ningpoensis),* Canidae family : Racoon dog *(Nyctereutes procyo- noidae koreensis),* Felidae family : Cat *(Felis catus).*

23. Social and Cultural Value

Du-ung Wetland is surrounded by the largest sand dunes in Korea .

24. Land tenure/ownership:

(a) within the Ramsar site:

□Under government ownership

(b) in the surrounding area:

□ Most of the surrounding areas are privately owned

25. Current land (including water) use:

(a) within the Ramsar site:

□ The Du-ung wetland area has been designated as a Wetland Conservation Area (November 1, 2001) and every development action is now forbidden

(b) in the surroundings/catchment:

□ Used for agricultural purposes

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

(a) within the Ramsar site
□ No development activities

(b) in the surrounding area:
□ It has been used for pasturing purpose.

27. Conservation measures taken:

□ Since it was designated as a Wetland Conservation Area in November 1, 2001, the annual survey on the vegetation changes in the wetland has been conducted and the Detailed Monitoring will be conducted by Department of Nature Ecology, National Institute of Environmental Research 2007 for the development of Du-ung Wetland Conservation Plan

28. Conservation measures proposed but not yet implemented:

□ Visitors Centre is planned to be established in 2007.
□ Private-owned land will be purchased in 2007 (part of private-owned land was purchased in 2006).

29. Current scientific research and facilities:

□ AWS (Automatic Weather System) is in operation

30. Current conservation education:

□ There is no conservation education programme in action. However, wetland tour programs, eco-guide training sessions and wetland study tour are being developed. These programmes will begin with the completion of the visitors centre and other facilities.

31. Current recreation and tourism:

□ Exact number of tourists visiting the area has not been reported. However, Sindu coastal dune is one of the most popular beaches in Korea and is located right next to Du-ung wetland, it is easy to guess that there have been many tourists visited the area.
□ Under the Wetland Conservation Act, no recreation and tourism is allowed in the area officially.

32. Jurisdiction:

□ Under South Chung Cheong Province's control

33. Management authority:

□ The head of Geum River Basin Environmental Office has responsibility of management of the wetland based on the phrase 18, Wetland Conservation Act.
□ **Name:** LEE, Eung Ju
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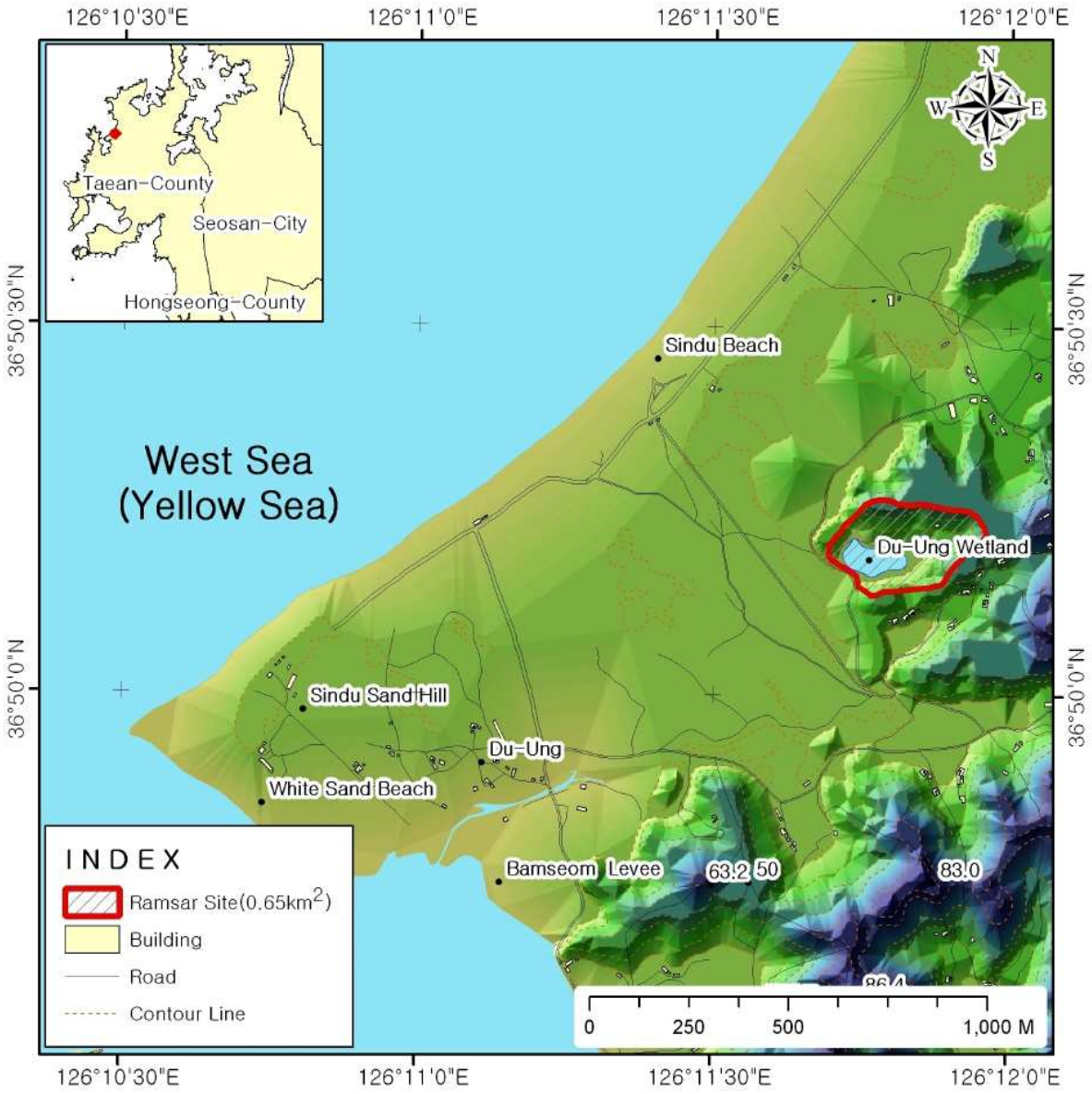
34. Bibliographical references:

- Research Institute of Industry and Environment, Gyungwon Uni. (2004) "*Conservation and Sustainable Use of Sindu Sand Dune*"
- MOE (2002) "*Conservation of Sand Dunes*".
- MOE (2002) "*Sindu Sand Dune, Taean Peninsula – Du-ung Wetland*"
- MOE (2002) "*Conservation Plan of Du-ung Wetland*"
- National Park (2003) "*Monitoring on Sand Dunes on Tae-an Peninsula*"
- WOO, H. J. (2002) "*Research on Sand Dunes and Conservation Plan*"
- JUNG, Y.K. and KIM, J.W. (1998) "*Vegetation of Coastal Dunes*"



Picture 1. GIS map and the location of Du-ung wetland

Du-ung Wetland

Du-ung Wetland

Lizard (Eremias Argus Peters)

golden frog (rana plancyi koreana)

AnnexI Species list of insects

Scientific name
Order Orthoptera
Family Terigidae
Tetrix japonica Bolivar
Euparatettix insularis Bey- Bienko
Order Odonata
Family Coenagrionidae
Ischnura asiatica Brauer
Family Aeshnidae
Anaxparthenope julius Brauer
Family Libellulidae
Lyriothemis pachygastra (Selys)
Orthetrum albistylum speciosum (Uhler)
Sympetrum striolatum imitoides Bartenef
Order Dermaptera
Family Labiduridae
Labidura riparia japonica de Haan
Family Anisolabididae
Anisolabis maritima (Bonelli)
Order Mantodea
Family Mantidae
Tenodera angustipennis Saussure
Order Hemiptera
Family Nepidae
Ranatra unicolor Scott
Famliy Notonectidae
Notonecta triguttata Motschulsky
Family Ochteridae
Ochterus marginatus Latreille
Family Belostomatidae
Muljarus japonicus Vuillefroy
Diplonychus esakii Miyamoto et Lee
Family Reduviidae
Sphedanolestes impressicollis (Stål)
Family Pentatomidae
Aelia fieberi Scott
Dolycoris baccarum Linnaeus
Eurydema gebleri Kolenati
Eysarcoris lewisi (Distant)
*Eysarcoris ventrali*s Westwood
Homalogonia obutusa (Walker)
Plautia stali Scott
Family. Coreidae
Cletus trigonus (Thunberg)
Homoeocerus dilatatus Horváth
Family Alydidae
Riptortus clavatus (Thunberg)
Family Rhopalidae
*Rhopalus macularta*s Fieber

Liorhyssus hyalinus Fbricius
Stictopleurus crassicornis (Linnaeus)
Family Lygaeidae
Dimorphopterus pallipes (Distant)
Geocris proteus Distant
Hypogeocoris itonis (Horváth)
Neolethaeus dallasi Scott
Nysius plebejus Distant
Pachygrontha antennata (Uhler)
Paromius rufipes (Motschulsky)
Stigmatonotum rupipes Motschulsky
Family Miridae
Polymerus cognatus Fieber
Trigonotylus ruficornis Geoffroy
Adelphocoris lineolatus Goeze

Order Homoptera
Family Cicadellidae
Cicadella viridis Linnaeus
Motschulskyia serrata (Matsumura)
Family Cixiidae
Oliarus apicalis Uhler

Order Neuroptera
Family Myrmeleontidae
Hagenomyia micans (MacLachlan)
Family Chrysopidae
Chrysopa sp.

Order Coleoptera
Family Cicindelidae
Cicindela transbaicalica hanifasciata Kolbe
Cicindela sp.
Family Carabidae
Craspedonotus tibilis Schaum
Anoplogenius cyanescens Hope
Scarites sulcatus Olivier
Family Gyrinidae
Dineutus orientalis Moder
Family Dytiscidae
Cybister japonicus Sharp
Family Staphylinidae
Atheta sp.
Bledius curvicornis Sharp
Gabronthus sp.
Heterothops cognatus Sharp
Myrmecocephalus sapida (Sharp)
Paederus fuscipes (Fabricius)
Phucobius simulator Sharp
Quedius sp.
Family Scarabaeidae
Onthophagus japonicus Harold
Onthophagus lenzii Harold
Family Aphodiidae
Aphodius elegans Allibert
Aphodius apicalis Harold
Aphodius brachysomus Solsky

Aphodius rugosostriatus Waterhouse
Aphodius sublimbatus (Motschulsky)
Family Histeridae
Atholus bimaculatus Linnaeus
Family Rutelidae
Adoretus tenuimaculatus Waterhouse
Family Cantharidae
Podabus heydeni Kisenwetter
Family Cerambycidae
Leptura aethiops Poda
Phytoecia rufiventris Gautier
Family Anthicidae
Anthelephila sp.
Pseudoleptaleus sp.
Family Tenebrionidae
Gonocephalum sp.
Family Coccinellidae
Anisosticta kobenica Lewis
Coccinella septempunctata Linnaeus
Harmonia axyridis (Pallas)
Hippodamia tredecimpunctata Linnaeus
Propulea japonica Thunberg
Scymnus fuscatus Boheman
Family Melyridae
Hypebaeus chlorizanus Kiesenwetter
Malachius prolongatus Motschulsky
Family Chrysomelidae
Chaetocnema sp.
Chrysomela vigintipunctata (Scopoli)
Chrysolina aurichalcea (Mannerheim)
Cryptocephalus luridipennis Suffrian
Galerucella nipponensis (Laboissiere)
Pagria signata (Motschulsky)

Order Hymenoptera
Family Vespidae
Polistes japonicus japonicus Saussure
Polistes mandarinus Saussure de Geer
Vespa mandarinia Cameron
Family Apidae
Apis mellifera Linnaeus

Order Diptera
Family Tipulidae
Nephrotoma virgata (Coquillett)
Family Sepsidae
Spesis monostigma Thomson
Family Tachinidae
Tachina nupta (rondani)
Family Tabanidae
Chrysops suavis Loew
Family Syrphidae
Ischyrosyrphus laternarius (Müller)
Melanostoma scalare (Fabricius)
Sphaerophoria menthastri (Linnaeus)
Family Tephritidae
Campiglossa hirayamae (Matsumura)

Order Lepidoptera
Family Hesperiidae
Lobocla bifasciata Bremer et Grey
Family Pieridae
Colias erate Esper
Artogeia rapae Linné
Family Lycaenidae
Celastriuna argiolus(Linne)
Lycaeides argyrognomon Bergsträsser
Everes argiades(Pallas)
Lycaena phlaeas(Linne)
Pseudozizeeria maha (Kollar)
Family Satyridae
Ypthima argus Butler
Ypthima motschulsky Bremer et Grey
Family Nymphalidae
Polygonia c-aureum Linné
Neptis sappho Pallas
Family Zygaenidae
Illibers pruni Dyar