I. Biodiversity in Korea National Parks

II. A status of globally vulnerable species ‘Saunders’ gulls’ in South Korea

Young-Soo Kwon
Korea National Park
1. Biodiversity in KNPs (Korea National Parks)
   - Introduction of the KNPS (Korea National Park Service)
   - Status of animals and plants
   - Major Management Activities
     - Habitat conservation
     - Systematic research and monitoring on natural resources
     - Migratory Birds Center

2. A status of globally vulnerable species
   ‘Saunders’ gulls’ in South Korea
   - Breeding population
   - History of Songdo reclaimed land
   - Breeding population and status in Songdo reclaimed land
   - Conservation of Saunders’ gulls in South Korea
How many species become extinct each year?
Human has a responsibility for extinction..
National park service?

- Reserve of land
- Protected from development and pollution
- Protected area of IUCN category II

Conservation and sustainable use of Park resources
### Current Status of the Korea National Park

**20 National Parks**
- Mountain Park: 16
- Marine Park: 2
- Seashore Park: 1
- Historic Park: 1

#### Area (unit: km²)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Land</th>
<th>Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6,579</td>
<td>3,899</td>
<td>2,680</td>
</tr>
<tr>
<td>(100%)</td>
<td>(59%)</td>
<td>(41%)</td>
<td></td>
</tr>
</tbody>
</table>

- Bukhansan
- Chiaksan
- Woraksan
- Songnisan
- Juwangsan
- Gayasan
- Naejangsan
- Jirisan
- Wolchulsan
- Byeongeun bando
- Hallyeohaesang
- Dadohae haesang
- Hallasan
- Gyeongju
- Odaseo han
- Seorak han
- Gyeryongsan
- Deogyusan
- Gyeonaju
- Taeisan
- Haesan

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# Biodiversity in Korea national parks

## Main resources (species)

<table>
<thead>
<tr>
<th>Category</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants</td>
<td>3,575</td>
</tr>
<tr>
<td>Higher fungi</td>
<td>1,224</td>
</tr>
<tr>
<td>Mammals</td>
<td>64</td>
</tr>
<tr>
<td>Birds</td>
<td>397</td>
</tr>
<tr>
<td>amphibians</td>
<td>21</td>
</tr>
<tr>
<td>reptiles</td>
<td>23</td>
</tr>
<tr>
<td>fishes</td>
<td>121</td>
</tr>
<tr>
<td>insects</td>
<td>7,454</td>
</tr>
<tr>
<td>spiders</td>
<td>375</td>
</tr>
<tr>
<td>algae</td>
<td>566</td>
</tr>
<tr>
<td>Bentic macroinvertebrates</td>
<td>457</td>
</tr>
<tr>
<td>Soft bottom macroinvertebrates</td>
<td>615</td>
</tr>
</tbody>
</table>

**Total 15,727 species**
1. Habitat Conservation

- Restoration of endangered species
  - Asiatic black bear, Korean goral
- Expansion of ‘Special Preserved-Area’ (wildlife habitat, wetlands, valleys)
  - off-limits in wildlife habitat, wetlands, valleys (68 areas, 217,885,290m². Jan. 2009)
- Regular monitoring on ecosystem change

Asiatic black bears (*Ursus thibetanus ussuricus*)
(Natural Monument No.329)

Monitoring in Chilseon Valley
2. Systematic research and monitoring on natural resources

- Construction of inventory of species and habitat data (15,727 species)
- Expansion on the scope of monitoring on natural resources
  - Survey on Oil Spill (Hebei Spirit)
  - Monitoring on specific field (ex. the effect of Climate Change)
  - Research & Survey on migratory birds in Hongdo(Is.) & Huksando(Is.)

Close examination of trees
Collecting samples for the gronomical survey
Migratory Birds Center in KNPS

Permanent Field Station for migratory bird research

Stopover sites

Small area (6.47㎢)

High diversity

Birds in Korea: 500 species
Birds in Hongdo Island: 337 species (data from 2003 – 2007)

Birds in Korea: 500 species
Birds in Hongdo Island: 337 species (data from 2003 – 2007)
Bird Banding: Mist Netting
Bird Banding: Recovery

Black-browed Reed Warbler
- Banding Data
  - Ring No.: KANKYOCHO JAPAN 1D 87446
  - Site: Hirata city, Shimane pref., Japan
  - Recovery: 9 days

Mongolian Herring Gull
- Wing-tag Data
  - Wing-tag No.: AC38
  - Date: May. 18, 2005
  - Site: Airchan Nuur of Northern Mongolia
- Recovery Data
  - Date: Dec. 13, 2005
  - Site: Hong-do, Jollanam-do pref., South Korea

Middendorff’s Grasshopper Warbler
- Banding Data
  - Ring No.: KANKYOCHO TOKYO JAPAN 2S 78585
  - Date: Aug. 15, 2006.
  - Site: Iwaki river, Wakamiya, Nakadomari, Aomori pref., Japan
- Recovery Data
  - Site: Hongdo Island, Jollanam-do pref., South Korea

Recovery records
II. A study on breeding status and ecology of Saunders’ gulls (*Larus saundersi*), South Korea
Saunders’ gulls (*Larus saundersi)*

Vulnerable species on the IUCN Red List

- Wintering sites: southern China, Hong Kong, Vietnam, Taiwan, Japan and Korea.
- Breeding sites: mainly several sites in China and Korea.
- The population: about 8,000 individuals (delHoyo *et al* 1996; Perennou *et al*. 1994; Red Data Book (IUCN)).
Breeding population of the Saunders' Gull in South Korea.
History of Songdo reclaimed land

- Youngjongdo
- Breeding sites
- Songdo

Songdo reclaimed land
- Landfill projects
- Urbanization
- Industrial development
History of Songdo reclaimed land

Site A

Site B

Breeding site

SEA COAST
Breeding population in Songdo reclaimed land

- Site A: Breeding site

- Breeding population in Songdo reclaimed land

- Graph showing number of individuals over years:
  - 2003: 0
  - 2005: 200
  - 2006: 400
  - 2007: 600
  - 2008: 800

- New reclaimed land

- First reclaimed land

- Start building a new town

- Site A: Breeding site

- Site B: New reclaimed land
Breeding status of Saunders' Gulls at Songdo landfill in South Korea

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2007</th>
<th>2008</th>
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</thead>
<tbody>
<tr>
<td>No. of breeding nests</td>
<td>146</td>
<td>35</td>
<td>480</td>
</tr>
<tr>
<td>Distance among nests (m)</td>
<td>48±12.4</td>
<td>51±40.4</td>
<td>7.2±8.6</td>
</tr>
<tr>
<td>Clutch size</td>
<td>2.93±0.26</td>
<td>2.34±0.87</td>
<td>2.96±0.72</td>
</tr>
<tr>
<td>Hatching success (%)</td>
<td>48.1</td>
<td>21.4</td>
<td>26.2</td>
</tr>
<tr>
<td>Breeding success (%)</td>
<td>29.1</td>
<td>0</td>
<td>22.18</td>
</tr>
</tbody>
</table>
Causes of breeding failure in Songdo Landfill

<table>
<thead>
<tr>
<th>Causes</th>
<th>2007</th>
<th></th>
<th></th>
<th>2008</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>eggs</td>
<td>%</td>
<td>chicks</td>
<td>%</td>
<td>eggs</td>
<td>%</td>
</tr>
<tr>
<td>Weather</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>21.4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Predation</td>
<td>43</td>
<td>54.4</td>
<td>5</td>
<td>35.7</td>
<td>65</td>
<td>38.0</td>
</tr>
<tr>
<td>Disappear</td>
<td>36</td>
<td>45.6</td>
<td>6</td>
<td>42.9</td>
<td>106</td>
<td>62.0</td>
</tr>
<tr>
<td>Total</td>
<td>79</td>
<td>100</td>
<td>14</td>
<td>100</td>
<td>171</td>
<td>100</td>
</tr>
</tbody>
</table>
Breeding population and size of breeding area in South Korea

![Graph showing the number of individuals and the size of the breeding area from 1999 to 2008. The number of individuals increases over time, while the size of the breeding area fluctuates.](image)
For the their future?
Conservation of Saunders’ gulls in South Korea

Habitat destroyed by development

Make an alternative habitat
Summary

- The Saunders’ gull is vulnerable species on the IUCN Red list
- Breeding population of the Saunders’ gull has been increased last 10 years in South Korea
- The Saunders’ gull bred at the reclaimed land for new town
- Breeding population was increased and size of breeding area has been declined
- The Korean government makes an efforts to make alternative habitats for Saunders’ gulls
Special thanks to ..

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- Eunmi KIM
- Korea National Park Service
- Japan Society for the Promotion of Science (JSPS)
Thank You for your attention