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Biodiversity and conservation of mire ecosystems in Hokkaido, Japan

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Change in wetland area at different regions in Japan

Today’s Topics

I. Introduction of mires in Hokkaido

II. Decline and the present condition of mires in Hokkaido

III. Biodiversity and conservation of remaining mire ecosystem in Hokkaido

Climatic vegetational zones in East Asia, After Hamet-Ahti et al. (1974)

Explanation of symbols:
  A - arctic
  HA - hemiarctic
  NB - northern boreal
  SB - southern boreal
  CT - cool temperate
  WT - warm temperate
  STR - subtropical
  TR - tropical
Climatic mire zones in Japan
After Wolejko and Ito (1986)

Explanation of symbols:
1. mountain mire zone of Hokkaido
2. lowland mire zone of Hokkaido
3. mountain mire and upland bog zone of northern Honshu
4. transitional zone
5. peatless zone of southern Japan

Distribution of the present mires in Hokkaido
Fujita, H. et al. (1997)

Typical mires in Hokkaido
Upland (mountainous region)

Major mires in the upland and lowland

II. Decline and the present condition of mires in Hokkaido

Typical mires in Hokkaido
Lowland (alluvial plain, river side)
Change of mire area in Hokkaido

200,642 ha
59,881 ha
Survival percentage 29.8%


Distribution of peatlands and current existing wetlands in Hokkaido

Change in landuse of Ishikari Mire (Miyaji & Kohyama 1997)

Present condition of Bibai Mire

After Kasubuchi et al. 1995
Present condition of Shinsinotsu mire

Change of the river network around Sarobestu mire

Original river network (before 1920s)  Present river network

Reduction of Sarobestu mire

Change of the mire area

Expansion of Sasa growing area in Sarobestu mire

Expansion of Sasa growing area in Sarobestu mire

III. Biodiversity and conservation of remaining mire ecosystem

Change of the open water area of Penke-pond
A dashed line is simulated Penke-pond area in the future.

Ownership of mires in Hokkaido

Database for wetland biodiversity analysis

Literature used for the database

The number of vascular plant species in the database
Example of the analysis using the database

<table>
<thead>
<tr>
<th>No. of Vascular plant</th>
<th>No. of Red list plant</th>
<th>No. of Invasive plant</th>
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<td>[Diagram]</td>
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- Identify priority wetlands for conservation

Based upon Japanese Red list (Ministry of Environment, Japan 2010)
Based upon Hokkaido Blue list (Hokkaido, Japan 2012)
Blue list = invasive alien species list

Conclusion
- In Hokkaido, more than 70% of mire area has been lost during the past 100 years.
- It is urgent for human society to protect and restore the remaining mires.
- The mires in the rural area and the urban area have serious problems due to drainage, land subsidience, mire vegetation change etc.
- For further progress;
  - Accumulation of scientific knowledge and commitment of researches,
  - Long term monitoring project,
  - Organization of new method to evaluate biodiversity

Buffer zone between mire and grassland

Before setting up the buffer zone

Buffer zone between mire and grassland.
(after Wakkanai Development and Construction Department)

25 m

The water level in the farmland decreased after the construction of the new farm drain.
Buffer zone is flooded due to the overflowing of the old drain.