Chapter 2-4

Extant Plants on the Lakeshore and in the Catchment Area of Lake Biwa

Abstract
One of the greatest characteristics of the flora on the lakeshore is the coexistence of plants normally found on seashore beaches with swampy lowland plants. Reed marshes are one of the nostalgic scenic attractions of the lakeshore. Flora in the catchment area are characterized by a tremendous diversity with flora ranging from plants typically found in warm climes to plants normally found in regions further north, with elements from the Sea of Japan side also in evidence.
Keywords: Seashore beach plants, Floodplain plants, Reeds, Warm-climate plants, Cool-temperature plants, Japan Sea element

1. Plants on the Lakeshore

1.1 Seashore Beach Plants

Sandy beaches account for approximately 30% of the lakeshore of Lake Biwa (See Chapter 1-4) and this is why, despite the fact that Lake Biwa is an inland basin, more than ten varieties of seaside beach flora can currently be found on the lakeshore. Typical examples include beach peas, round-leaf *vitex* and seashore false bindweed. From genetic analyses, it is known that Lake Biwa populations of these three species have been isolated from the seashore populations of the Japanese Archipelago as "landlocked" populations since the predecessor lake was isolated over an extended period of time.

Unfortunately, areas of growth for all these seashore beach plants are limited to the lakeshore, and this puts them in danger of losing habitats that will enable their continued existence.

1.2 Swampy Lowland Plants

In the past, large floodplains including numerous bodies of water such as attached lakes were widespread in the area around Lake Biwa, and many forms of wetland plant life with a life history of dependence on this disturbance regime are still growing in the area, although few in number. Approximately 17 species have been identified such as the *Persicaria hastatosagittatum* and *Solanum megacarpum*. However, now only roughly 15% of the lakeshore offers suitable habitats for these kinds of floodplain flora and almost all these varieties of plant life are threatened with extinction due not only to the decreasing size of floodplain areas, but also to the diminishing frequency, intensity and duration of flooding.

1.3 Scenic Plains of the Lake District: Common Reed Marshes

Three varieties of *Phragmites* can be found in the surrounds of Lake Biwa: common reed, Japanese reed and tropical reed. Type locality of Japanese reed is Japan. This species characterized by a greater resilience to winds and waves than common reed. Common reed limited to areas of water in the mother Lake Biwa characterized by mild winds and waves. In addition, this species feature intra-specifies polyploidy (while octoploid and decaploid varieties dominate the area around Lake Biwa) and their group genetic diversity and reproduction properties vary widely depending on the area around Lake Biwa.

Fig. 2-4-1 Beach pea, designated as a rare variety by Shiga Prefecture

2. Plants in the Catchment Area

2.1 Varieties Specific to Shiga Prefecture

Tracheophytes currently found within Shiga Prefecture have been identified by Shiro Kitamura, Gen Murata, et al, and as many as approximately 2,300 varieties have been confirmed. Endemic varieties specific to Shiga Prefecture include *Veronica subsessilis* and *Ibuki Juniperus chinensis* from Mt. Ibuki while quasi-endemic varieties such as *Cirsium tashiroi* can also be found.

2.2 Plant Life in the Warm Climate in the South of Shiga Prefecture

Because of the warming of the climate by Lake Biwa, forests featuring varieties of tree such as *Machilus thunbergii* and *Castanopsis* remain on or near the lakeshores and in shrine and temple groves on the alluvial plain at an elevation of roughly 100 m in the surrounds of Lake Biwa side by side with flora from warm climes such as *Symplocos lancifolia* and *Alpinia japonica*. In addition, varieties such as *Herberis sieboldii* can be seen in the granite oligotrophic wetlands in the mountainous region in the south and *Disanthus cercidifolius* in area of Mt. Tagami.

2.3 Plant Life Surround the Sea of Japan Side

The mountainous regions to the west and north of the lake belong to the climatic region typical of the Sea of Japan side characterized by heavy snowfall, and this is where flora such as the *Rhododendron albrechtii*. For example, *Daphniphyllum macropodum* var. *humile* and *Cephalotaxus harringtonia* var. *nana* are corresponding varieties (*Daphniphyllum macropodum* and *Cephalotaxus harringtonia*) of which are found in the southern part of Shiga Prefecture that belongs to the climatic region typical of the Pacific Ocean. Varieties such as the *Parasenecio peltifolius* unique to regions with heavy snowfall grow are also found.

2.4 Plant Life from Northern Regions

Plant life from northern regions migrated to the Japanese Archipelago during cool periods in geological history. Although rare in Shiga Prefecture, an area with no high mountains, varieties such as *Geranium yesoemse* var. *nipponicum* and *Sanguisorba hakusanensis* can be found on Mts. Ibuki and Akasaka in the mountainous regions to the north, marking the extreme southwest border of their area growth. Plants normally found in cold regions (e.g. *Lysimachia thyrsiflora, Carex vesicaria*) believed to be relic species from the ice age could also be seen here.

2.5 Plants from Cool Regions

Although few in number, mountains approximately from 700 to 1,000 m above sea level can be found remaining varieties of naturally-occurring vegetation from cool climes such as deciduous forests of the beech or maple family and scrub forests of the heath family. Beech forests populated with diverse varieties of flora such as Siebold maple and *Calanthe reflexa* can be found in the west and north area of the catchments and the Suzuka mountain range. A mountainous riparian forest has been formed in these cool-temperate deciduous broad-leaved forest dominated by trees such as Siebold beech and Mongolian oak, on its slopes and Japanese horse chestnut and Japanese wing nut along the banks of mountain streams. *Cryptomeria japonica* var. *radicans* can also be found mixed with other varieties on mountain ridges in the west of the lake.

Fig. 2-4-2
Japanese horse chestnut (*Aesculus turbinata*) in the rare genetic system to the northwest area in the catchment

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