

Chapter 1-7

Fossils from Lake Biwa

Abstract

As well as fossils of plants, fish, shellfish, elephants and deer, fossils of pollen and diatoms have also been discovered in the Kobiwako Group that is related to the formative process of Lake Biwa. The strata at the bottom of Lake Biwa and its predecessors provide us with a record of the environments both of Lake Biwa and the Earth some 4 million and hundreds of thousands of years ago.

Keywords: Kobiwako Group, Fossils, Global environment

1. Plant Fossils from Lake Biwa

The Kobiwako Group that is related to the formative process of Lake Biwa can be found in the dry riverbeds and cliffs around the lake. Some fossils of plants and animals have been found in these strata. For example, petrified forests with the remains of the roots and trunks of metasequoia and Chinese swamp cypress with trunks more than one meter in diameter can be found in the dry riverbeds of rivers that drain into Lake Biwa. Fossils of leaves, cones and seeds are also discovered in strata on the cliffs of construction sites.



Fig. 1-7-1 Petrified forest discovered in the Echi River (1991)

2. Fossils of Fish and Shellfish

Fossils of aquatic organisms that lived in the lake are also unearthed, almost all of which are of the pharyngeal teeth of cyprinids. Fossils of teeth known as “pharyngeal teeth” that is developed in the throats of cyprinids are commonly found. Examination of such fossils reveals that

the Lake Biwa of the past was densely populated not only with several kinds of carps and crucian carps, but also fish from the Xenocyprinae. Although now extinct in Japan, these fish are still common in current China. Many fossil shells have been discovered and these tell us that four extinction events occurred during the more than 4 million years of the history of Lake Biwa.

We know from these fossils that most of the shellfish found in Lake Biwa nowadays appeared in the lake roughly 1 million years ago.



Fig. 1-7-2 Fossil of the pharyngeal teeth of an extinct carp

3. Fossils of Terrestrial Vertebrates

Fossils of vertebrates that lived on the land are also found in the Kobiwako Group. As well as large mammals such as elephants, rhinoceroses, deer, cows and wild boar, fossils of smaller mammals such as rabbits and mice as well as turtles, crocodiles and birds have also been unearthed. Moreover, many fossils of the footprints of these animals have also been

discovered, and a sequence of footprints is also recognized among them.

4. Lake Biwa as a Record of Past Environments

In addition to this, specimens invisible to the naked eye including pollen and diatoms are also studied and comprehensive analysis of such fossils paints a picture of phenomena such as changes in the

fauna and flora in the Lake Biwa region and climatic changes that occurred on a global scale. The present-day Lake Biwa and the Kobiwako Group accumulated in its environs provides us with a record of the environments of the Lake Biwa region and the global environment over that last 4 million and hundreds of thousands of years.

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Fig. 1-7-3 Reconstruction of the skeleton of a *Stegodon aurora* (Taga Town Museum)



Fig. 1-7-4 Fossil pollen of cedar family from approximately 1.8 million years ago (The bar is 10 microns long.)



Fig. 1-7-5 Collection of fossils from the Kobiwako Group