

Diatom 15: 127-147 (英文)

森 勇一：先史～歴史時代の地層中の珪藻化石群集と古環境復元への応用

Yuichi Mori : Fossil diatom assemblages from pre-historical and historical deposits and their paleoenvironmental applications

#### Abstract

Diatoms are the most abundant of all aquatic living things in the hydrosphere ; they are adapted to various environments and have high diversity. Here I present environmental changes in pre-historical to historical ages based on the analyses of diatom fossils from 48 archaeological sites in Japan.

I noted indicative characteristics of fossil diatoms, and collected them at the following sites : Tomizawa site (Sendai City of Miyagi Prefecture, Paleolithic to Kofun Periods), Matsukawado site group (Kasugai City of Aichi Pref., middle Jomon to Edo Periods), Asahi site (Kiyosu-cho and three towns of Aichi Pref., middle Jomon to Medieval Periods) and Okajima site (Nishio city of Aichi Pref., final Jomon to Medieval Periods).

In the deposits of the Paleolithic Period, I found numerous diatoms and many insect fossils at the Tomizawa site. I reconstructed a paleogeographical map based on the appearance rate of aquatic diatoms and terrestrial diatoms. Each diatom can be separated into those that inhabited slightly above or below the ground at that time. This indicates that diatom and insect fossils did not move their living position.

Boring core samples of the early part of the Jomon Period at the Okajima and Asahi sites, include diatom fossils, mostly belonging to the inner bay or coastal diatoms such as *Cyclotella striata*, *Thalassionema nitzschioides*, *Thalassiosira* spp., and *Paralia sulcata*. Therefore during postglacial transgression, the coastal plain submerged rapidly in the early Holocene, and its coastline invaded towards the central parts of the Mikawa and Nobi Plains.

The deposits which contained a lot of brackish and marine diatoms in the late Jomon Period were found in the low land sites facing the coastal plain (Second marine transgression in the late Jomon Period). And when the Akahoya (6,300yrsBP) and the Matsukawado (3,120±120yrsBP) volcanic ash layers fell, water conditions based on diatom analyses suggested a remarkable change in the water ecosystems.

Big changes of flora and fauna in the Yayoi Period are also indicated by the prolific occurrence of the paddy field diatoms and insects when the water supply system was developed nationwide for the paddy agriculture. Standardization of living things in the lowland was caused by rice cultivation in Japan. As a result of human impact on the natural ecosystem, distinct changes in the biological community occurred. From the

Yayoi to Kofun Periods, saprophilous diatoms, eutrophic diatoms, coprophagous insects, saprophagous insects and parasite eggs were found from the Asahi and some other sites. These urban living things indicate the possibility of the existence of breeding animals and the concentration of people in the Asahi moated circular settlements. With the development of an agricultural society, ecological changes and environmental pollution seem to have been accelerated.

In the historical age, I found epiphytic diatoms on seaweeds in the fragments of the salt-making pottery, which educed a method of the ancient salt-making. In addition, I investigated fossil diatom assemblages in Medieval moat deposits of the Kiyosu-jokamachi site at Kiyosu town in Aichi Prefecture, which clearly showed the paleoenvironmental transition of the site.

Key index words

fossil diatoms, human impact, indicative diatoms, fossil insects, paleoenvironmental reconstruction, pre-historical and historical ages.