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## Relationship between the Extinction of the Big Mammals and the Human Activities at the Late Pleistocene in Japan

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The Palaeolithic hunters of Japan hunted animals such as *Palaeoloxodon naumanni* (Nauman's Elephant), *Sinomegacerus yabei* (Yabe's Giant Fallow Deer) and *Bison priscus* (Steppe Bison). However, these big game became extinct one after another in the late Late Pleistocene epoch because of the change of natural environment and the over-kill by humans. In the Holocene, animals such as *Cervus nippon* (Japanese Deer) and *Sus scrofa* (wild boar) took the place of big game and the Jomon people hunted these middle sized animals with the bow and arrow. The above view is at present widely acknowledged academically after the excavation of Nojiri Lake in Nagano Prefecture. However, it needs more research and investigation.

The circular site (20 ~ 50 m in diameter) of blocks (3 ~ 5 m in diameter) which intensively contain knife blades and flakes made of stone are considered to have been places where Palaeolithic hunters gathered together temporarily in order to hunt big game. This kind of site is unique to the early Late Palaeolithic epoch (about 33,000 to 28,000 B.P.). Moreover, many stone axes with ground blades, which are supposed to have been used for butchering big game, are also found from this period. The hunting of *Palaeoloxodon naumanni* or *Sinomegaceros yabei* was presumably done until around 28,000 B.P. After that, these animals considerably decreased in number, and seem to have become extinct around 15,000 B.P. In order to affirm their extinction because of over-killing, we must prepare an adequate explanation about the fact that at around the same time, carnivorous and ferocious animals such as the *Panthera tigris* (tiger), *Panthera pardus* (leopard) or insectivorous animals like *Anourosorex japonicus* (a kind of shrew), rodents like the *Microtus epiratticepoides* (a kind of field voles), *Microtus brandtiodes* (ditto), became extinct also. These animals are hard to be considered as targets of over-killing. Beside the over-kill, we must search harder for the relationship between the detailed climate change in the Late Pleistocene epoch, the change of natural environment caused by the fall of volcanic ash and the extinctions of the big mammals.

Furthermore, according to a palaeontological study, as early as the Middle Pleistocene, *Cervus grayi* (or *Cervus grayi katokiyomasai*), the ancestor of the *Cervus nippon*, *Sus scrofa* and *Sus*

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lydekkeri had crossed over to Japan; at least *C. grayi katokiyomasai* was already increasing. The Palaeolithic people in Japan made many trap pits and their targets may well have been wild boar. In fact we should suppose that the Palaeolithic people hunted extensively both deer and wild boar.