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| **Drawing the blueprint for the restoration of ‘Wolseong Forest’ through paleoenvironmental research**  **- Presenting a restoration blueprint through research on ancient Silla flora and fauna in the 5th century -** |

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The Gyeongju National Research Institute of Cultural Heritage (the GNRICH, Director Lee Jong-Hoon), under the Cultural Heritage Administration, achieved research results on organic matters identified at moats of Wolseong in Gyeongju for four years from 2016 to 2019. This achievement will be presented at the World Archaeology Congress (the WAC), which is a global academic conference to be held in Prague, the Czech Republic, in July next year. (the WAC originally planned to be held this July but it has been postponed to next year due to Coronavirus Pandemic.)

The WAC has the highest authority of archaeological research and more than 100 countries around the world participate in it. A session for the GNRICH is organized at the WAC in Plague next year. The GNRICH will present a blueprint for a restoration and results of paleoenvironment research on ‘Wolseong Forest’, which was surrounding the royal palace of the ancient Silla in the 5th century.

The paleoenvironmental research studies the relationship between ancient people and their surroundings, which was difficult to understand by excavation research alone. Organic matters from the excavation lead to anticipate the food of ancient people and their environment. Moreover, those organic matters provide crucial clues to reconstruct the lifestyles of the ancients and their living conditions. Because of that, the paleoenvironmental research is recognized as a very important field in archaeology. The GNRICH organized a ‘paleoenvironmental research team’ for the first time in Korea in 2017 and has been working to restore the intact history and culture of the ancient Silla by securing various research samples from the excavation researches.

The results of paleoenvironmental research on Wolseong and its surroundings, which will be presented through the WAC, are largely divided into three parts.

At the first, it is the research achievement of various plants and grains including seeds and fruits of the Silla era. The GNRICH excavated 63 species of seeds and fruits of the Silla era around the Wolseong and this was the largest quantity in the domestic excavation. Since then, 10 more species are identified. Based on natural scientific research of collected plant remains such as diatomic and pollen analyses, it suggests landscapes of Silla palace in the 5th century, where the Silla people might walk around the moats full of prickly water lilies and take a rest in the zelkova forest.

\*Atom (珪藻): A group of single-celled plants, which contains many silicon.

\*Pollen analysis: To estimate the changes of plant colonies and climate environment in the past through the investigation such as extraction of pollen or spore in sediments and types and proportions of plants.

Typical seeds identified on Wolseong are seeds of Paulownia wood and Ricinus. This is the first time to discover the seeds of Paulownia wood and Ricinus from the 5th century in ancient ruins. This research shows that the seeds of the Paulownia wood were a native species of Korea and the seeds of the Ricinus were introduced species, which was brought in for the use of it.

Secondly, an in-depth study on excavated bear bones in Wolseong illuminated how the Silla people used bear at that time. In Wolseong, a relatively large number of bear bones were discovered compared to other sites. As a result of close observation, those are presumed to be the bones of the Asiatic black bear (*Selenarctos Thibetanus Ursus Torquatus*). Therefore, this research paves the way for assuming the lineage of the bear from Silla era. Moreover, this leads to verify records of how the Silla people used bearskins in 『*Samguksagi*, History of the Three Kingdoms, 三國史記』 through the archaeological materials.

※ According to *Samguksagi*, there are records that can be interpreted as follows; a flag of Jaegam (a government position) is made of bear’s face skin; a flag of Gunsagam (a government position) is made of bear’s chest skin; a flag of Daejangcheokju is made of bear’s arm skin. These specific references of the use of the bearskins are significant in proving archaeological finds.

→ Although the route of the Asiatic black bear to Wolseong during the Silla era is needed to research further, a site of a workshop around Wolseong was investigated. Moreover, as traces of taking to pieces on animal bones were found, there is possible this processing may have been done around Wolseong.

Lastly, one of the great achievements is the attempt to focus on a single archaeological site to study the environment systematically. The GNRICH has tried to predict the ancient landscape, weather and climate namely precipitation and restore the life of ancient people, which was reflected in the ritual. These are the recent trend and uses of international research in archaeology.

The GNRICH will share these achievements of the paleoenvironmental research and its direction with scholars and research institutions in Korea in order to introduce and spread this research process and achievements through an academic conference, which will be held in September. The GNRICH will continue to research and strive to restore the history and culture of Silla, the lifestyles of the Silla people and its circumstances through the diverse and elaborate paleoenvironmental research.

1. Interpretation of bear records in *Samguksagi*
2. photo