

Geology and siliceous microfossil biostratigraphy of the Miocene formations near the whale fossil locality, Hae River, Hidaka district, Hokkaido

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A calcareous concretion containing whale bones was discovered as a float during the riparian works on the Hae River, Hidaka Town in 2005. Radiolarian and diatom assemblages recovered from the concretion indicate the *Lipmanella redondoensis* Zone and the *Rouxia californica* Zone, respectively, suggesting an age of 7.7 to 7.4 Ma. This age is concordant with the age range of the Nina Formation which is distributed near the locality of the concretion and was previously dated as ca. 10.1 to 3.5 Ma based on the diatom stratigraphy in the surrounding area. However, because of very few biostratigraphic data for the sedimentary rocks exposing along the Hae River, the location of the original home of the concretion is unknown. In order to detect the home locality, we surveyed geology along the river and analyzed diatom and radiolarian biostratigraphy for the sedimentary sequence. The Nina Formation exposing along the Hae River mainly consists of diatomaceous mudstone, sandy mudstone and sandstone. Many of the studied samples yielded common to abundant fossil diatoms that include various index species, *Denticulopsis praedimorpha*, *Denticulopsis dimorpha*, *Denticulopsis katayamae*, *Thalassionema schraderi* and *Neodenticula kamtschatica*. The occurrences of these species indicate that the Nina Formation encompasses the Middle Miocene through the Pliocene. However, we have not found diatom assemblages indicative of the *Rouxia californica* Zone from the studied samples, and, thus, the home locality of the whale fossil is still an unsolved question.

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