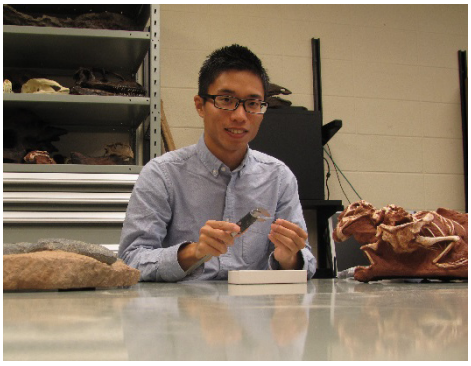
The Arctic Institute of North America presents the 2016-17

Arctic Speaker Series

Dinosaur Nesting in the High Arctic

Who:	Date:	Time:	Location:
Kohei Tanaka	February 15, 2017	4:00 – 5:00 pm	University of Calgary; Science A 106



Fossil dinosaur eggs, eggshells, and nests are found around the world, including in the high Arctic. The presence of dinosaur eggshells in an Upper Cretaceous formation of northernmost Siberia casts an intriguing question into how dinosaurs nested in high-latitude, polar paleoenvironments. One possible solution to successfully nest in such extreme paleoenvironments is brooding because adult contact provides constant, adequate heat for incubation of eggs. However, nesting in cool or cold environments is more challenging for species that cover their eggs with nest materials or substrate (i.e., mound or in-filled hole nests) because incubation heat is obtained from the surrounding environments (e.g., microbial respiration of decaying plant materials, solar radiation, geothermal activity). In order to better understand the incubation methods of dinosaurs at high latitudes, in particular those of covered nesters, I investigate the relationships between nests and nesting environments among both extant and fossil archosaur taxa. Analyses of living species revealed that nests that rely on heat from microbial respiration for incubation are used in cooler or colder environments than those that rely on heat from solar radiation. Also, nests relying on microbial respiration are often composed of plant materials and/or soil, whereas those relying on solar radiation and geothermal activity are usually built in sand. Analyses of dinosaur nests revealed that hadrosaur and sauropod eggs (megaloolithids) are associated with fine-grained pedogenic sediments, suggesting that they were incubated mainly by the decomposition of plant matter in the mound. In contrast, a strong association in eggs of other sauropods, those laying faveoloolithid eggs, with non-pedogenic, coarse-grained sediments (particularly sandstone) suggests that they were incubated in in-filled hole nests with heat from solar radiation or geothermal activities. The nests of brooding theropods (e.g., oviraptorosaurs and troodontids) are not associated with any specific lithology, as they were more versatile and could build nests on any substrate. Therefore, dinosaur taxa capable of producing high incubation heat, either through plant decomposition in mounds or adult contact incubation, were able to nest in high latitude environments

Biography: Kohei successfully defended his Ph.D. in December 2016 in the Department of Geoscience, University of Calgary. He graduated from Hokkaido University in Japan in 2008 and finished his master's at the University of Calgary in 2012. He is interested in the evolution and ecology of dinosaurs, and his research focuses on changes in nesting strategies that occurred during dinosaur evolution. Kohei will start a postdoctoral research program at Nagoya University in Japan on April.

This event is **free and open to the public**

There will be a reception in the AINA offices (ES-1040) immediately following the presentation

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