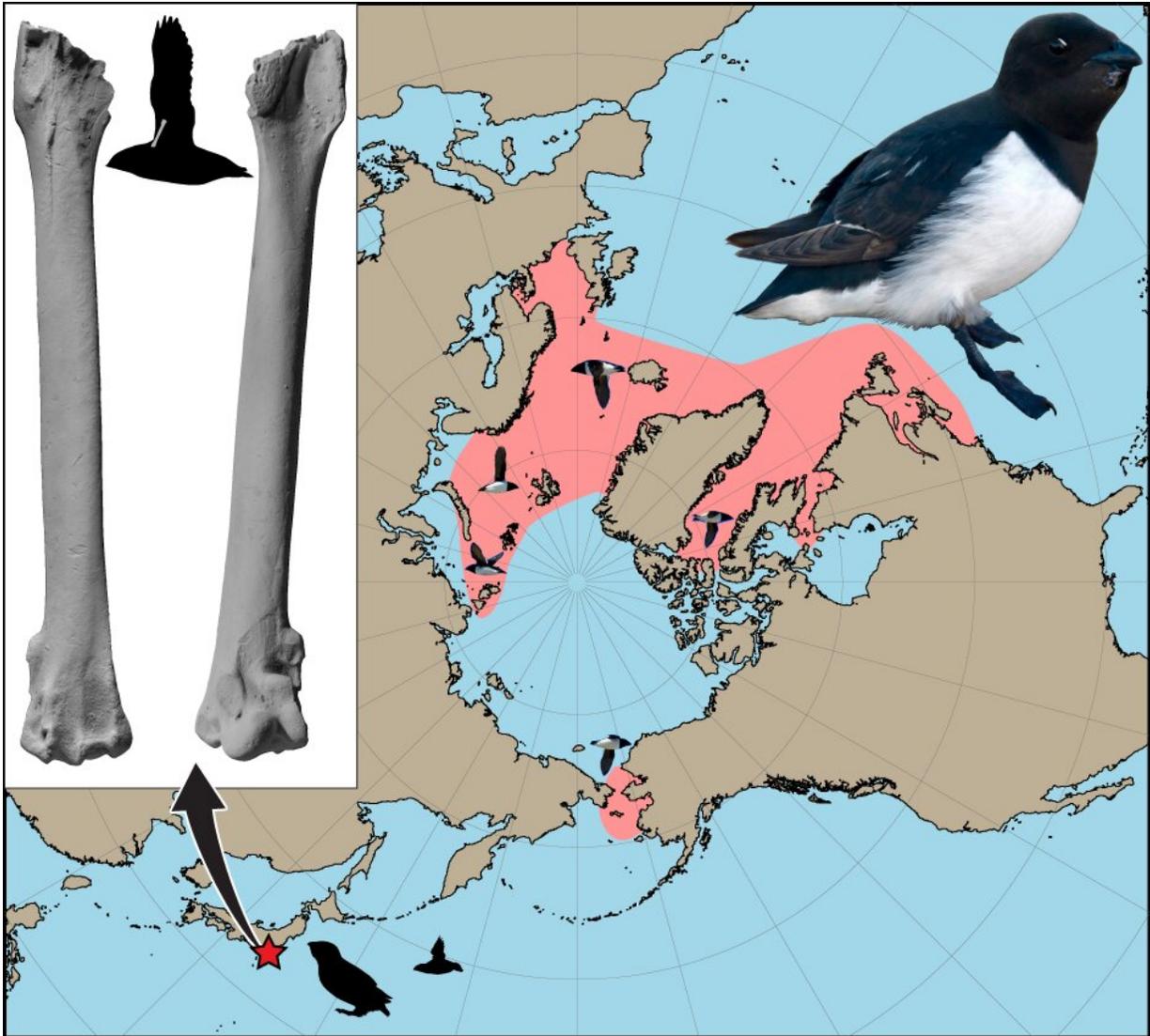


The little auks that lived in the Pacific

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Current distribution of the modern dovekie across the Atlantic. Credit: Kyoto University/Junya Watanabe (dovekie photo by Justin Ammendolia)

Findings from a 700,000-year-old fossil bone indicate that a close relative of the most abundant seabird species in the North Atlantic, the modern dovekie, or 'little auk,' used to thrive in the Pacific Ocean and Japan.

Seabirds are top predators in the marine ecosystem, and their distributions are shaped by numerous environmental factors in the ocean. As such, extensive scientific inquiries have been conducted on how seabirds respond to fluctuating oceanic environments in the ecologic and geologic timescales.

"The North Pacific has been one of the most intently investigated regions, but the fossil record of seabirds in the Pleistocene Epoch, about 2.6 to 0.01 million years ago, has been scarce," explains first author Junya Watanabe of Kyoto University's School of Science. "This has led to a frustrating lack of information in this critical time period concerning the origin of modern seabird communities."

In recent years, Watanabe and his team had been investigating seabird fossils from several locations in Chiba and Tokyo prefectures, gaining new insight on the Pleistocene seabird community in the region.

The group had been successful in identifying 17 fossils representing at least 9 [species](#) of birds: three species of ducks, a loon, an albatross, a shearwater, a cormorant, an extinct penguin-like seabird called manculline auk, and a dovekie. Most of these species can be found in the region today; however, the presence of a dovekie was completely unexpected.

Watanabe explains his findings published in *Journal of Vertebrate Paleontology*.

"At first it confused us that the fossil didn't match any of the Pacific

auks, but once we compared it with Atlantic ones, the similarity with the modern dovekie was apparent. It is not clear whether the present fossil is from the same species or a very close cousin, but we are positive it at least comes from the same lineage."

The dovekies we know today are mostly restricted to the North Atlantic and Arctic oceans, with their rare sightings in Japan considered accidental visits. Given the unlikeliness of such accidental visitors to be preserved as fossils, the new findings suggest that dovekies were once fairly common in Japan and the Pacific.

He continues, "Now the question is *why* dovekies are so rare in the North Pacific today, it's almost paradoxical given their abundance in the North Atlantic. That question remains unexplained, at least until recovery and investigation of further fossil materials."

Interestingly, local decline and extinction events in the past are common in many seabird groups. Deciphering possible causes of such events requires integration of knowledge from various disciplines, including paleontology, paleoclimatology, oceanography and [seabird](#) ecology. Watanabe and his team see this as a challenging but rewarding endeavor.

More information: Junya Watanabe et al, Seabirds (Aves) from the Pleistocene Kazusa and Shimosa groups, central Japan, *Journal of Vertebrate Paleontology* (2020). [DOI: 10.1080/02724634.2019.1697277](https://doi.org/10.1080/02724634.2019.1697277)

Provided by Kyoto University

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