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THE EARLIEST NORTH AMERICAN RECORD OF AUK (AVES: ALCIDAE) FROM THE LATE EOCENE OF CENTRAL GEORGIA

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A new fossil from the Hardie Mine, Gordon, Georgia is the earliest record (late Eocene, 36.0-34.2 Ma = Megannum, one million years on the radioisotopic time scale) of an auk (Aves: Alcidae) yet found. The next earliest fossil alcid record is from the Miocene, almost 20 million years later. Alcids have a good fossil record from the middle Miocene, (approximately 10.0 Ma) through the Pleistocene (1.8 Ma - 10,000 years before present) in the north Atlantic and north Pacific (Olson 1985; Chandler 1990a). *Hydrotherikornis oregonus* Miller (1931), the oldest purported alcid from the Eocene of California, is actually a petrel (Chandler 1990b) and is reassigned to the tubenoses (Procellariiformes). Alcids (auks, murre, guillemots, puffins, murrelets, and auklets) are Northern Hemisphere seabirds, of which there are 22 living and one recently extinct species. They are pelagic for most of the year coming ashore only to nest. Alcids are committed wing-propelled divers (Livezey 1988) and most are fish eaters, although a few are zooplankton feeders.

Geology

The Hardie Mine site is an inactive, open-pit kaolin mine located 3.9 km NNW of Gordon (32° 4.335'N, 83° 21.543'W), Wilkinson County, Georgia. An approximately one-meter thick stratum of in-place fossiliferous late Eocene Clinchfield Formation sediments is exposed on the north wall of the mine (Huddlestun and Hetrick 1985). Recent collecting of *in situ* and spoil pile Clinchfield sediments of the Hardie Mine have yielded numerous shark, ray, and bony fish teeth, palaeopheid snake vertebrae, a colubrid snake vertebra, and the alcid fossil reported here. The Clinchfield sediments of the Hardie Mine are a locally discrete fossiliferous unit (local fauna).

Discussion

The fossil, a left distal end of a humerus (Fig. 1), exhibits the lateral compression of the shaft characteristic of alcids as wing-propelled divers. The humerus compares closest in osteology and in size to the southern auk, *Australca grandis*, from Bone Valley (very early Pliocene, 5.0-4.5 Ma) of Florida and the recently (1844) extinct Great Auk, *Pinguinus*

impennis. The Hardie Mine auk can be assigned as a sister taxon to a clade of extinct and extant north Atlantic alcid genera including *Pinguinus*, *Australca*, *Alca*, and *Uria*.

This newly discovered auk is distinctive from the north Pacific radiation of flightless mancolline auks (Chandler 1990a). Paleogeographically, this new species of auk lived along the ancient coastline of the Atlantic during the Eocene marine transgression and is 20 million years older than any other fossil alcid yet reported from the fossil record. The characters of this humerus show that by the late Eocene (36.0-34.2 Ma) this ancient auk had evolved the specialized anatomy of a wing-propelled diver. This is consistent with our understanding of avian evolution in that most modern families of birds had evolved by the Eocene (Feduccia 1996).

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Figure 1. Eocene auk from Hardie Mine, Wilkinson County, Georgia. Eocene auk, **A** (GCVF 5690), distal end of left humerus, compared with *Australca grandis*, **B** (GCVF 5691). Measurements of GCVF 5690: length = [43.7]mm, distal end width = 10.5mm.