

New Insights on Tertiary Coals of Southeast Alaska

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In Southeast Alaska, nonmarine Tertiary coal-bearing sediments were deposited on eroded Mesozoic and Paleozoic marine basement rocks that were uplifted in early Tertiary time. The most abundant exposures of coal are present in the Angoon and Kuiu coal districts. Lignite crops out in the Kootznahoo Inlet area on Admiralty Island, Southeast Alaska where the Tertiary age Kootznahoo Formation derives its name. The Kootznahoo Formation is a 5,000-ft-thick Tertiary nonmarine clastic rock succession found in localized faulted basins in the central part of the Alexander Archipelago. The Stepphagen Mine, located on Kootznahoo Inlet produced the first coal mined in southeast Alaska and some of the first coal mined in Alaska in 1862. The U.S. Navy explored the inlet for coal deposits in 1868, later extracting coal for use by the USS Saginaw in 1869. Coal seams here range in thickness from less than 1 foot to 4 feet, with the thickest and only commercial-grade coals present near the top of the section in Miocene age strata. Lignite is also present in the Keku Strait area, immediately to the southeast on Kupreanof and Kuiu islands, and appears to be part of the same Tertiary basin. The Harkrader Mine located in Kanalku Bay of the Kootznahoo Inlet, owned and operated by the Admiralty Island Coal Company, had a total production of less than 1,000 short tons in the 1920's. Although relatively small in size, it was the most extensive coal mining effort in southeastern Alaska, and the mine closed in 1929. Coal from this mine was shipped to Juneau. Coal was historically mined at Murder Cove at the southern tip of Admiralty Island as well. The only record of coal production in the region around Kake comes from 1867, when Commander Mitchell of the U.S.S. Saginaw reports recovering about 4 tons of coal from an 18 inch seam on the beach of Hamilton Bay. Our analyses of coal samples collected during the course of field studies indicate Medium-volatile Bituminous and High-volatile Bituminous A and B coals are present in the Angoon area.

Study of the fossil floras from the basal Kootznahoo Formation confirms a latest Eocene to early Oligocene age for the base of the formation. Similarities are also noted with coeval floral assemblages from the Pacific Northwest (Washington and Oregon). The paleoclimate appears to have been wet, temperate in character, and the paleoenvironment is seemingly that of a low-land. A diverse flora in the slightly older Tertiary strata of the Keku Strait area, also included in the Kootznahoo Formation, is recognized to be of tropical to subtropical aspect, as indicated by a number of taxa including cycads and fan palms. The flora of the basal beds appears to be contemporaneous with that of the Chickaloon Formation (late Paleocene and/or early Eocene) of Southcentral Alaska. Based on the strong floral similarity, the basal beds of the Kootznahoo Formation of Hamilton Bay on western Kupreanof Island are likewise suggested to be of late Paleocene and/or early Eocene age. It should be noted that the lower stratigraphic age of the Kootznahoo Formation on Kupreanof and Kuiu islands is considerably older (Paleocene), and it is highly likely that future stratigraphic investigations will assign these beds (especially those exposed on Hamilton Bay, Kupreanof Island) to an older, separate stratigraphic unit.