Upper Silurian Facies and Fauna of Northeast Chichagof Island, Southeast Alaska

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Paleozoic rocks of the Alexander terrane are exposed along the coastline, in quarries, and at higher elevations in the northeastern part of Chichagof Island, Southeast Alaska. Thick Silurian carbonate shelf facies have previously been mapped from Prince of Wales Island to the south to Glacier Bay to the north. The limestone lithosome was named the Heceta Limestone on Prince of Wales Island, the Kuiu Limestone on Kuiu Island, the Kennnel Creek Limestone on northeast Chichagof Island and the Willoughby Limestone in Glacier Bay. This north-south trend is offset by the Chatham Strait fault.

A newly discovered fossil locality in siltstone and shale, closely associated with one of the limestone units, suggests that some of the limestone previously considered to be Devonian Cedar Cove Formation, are late Silurian (Ludlow) in age. The fossils include the brachiopods *Isorthis* (*Arcualla*), *Mesoleptostrophia*, Silurian-type *Howellella*, new family and genus of strophic atrypacean, *Morinorhynchus*, coarsely costate "*Atrypa*", a single specimen of *Cyrtia*, and a single specimen of an athyroid. Gastropods are less common and include *Medfracaulus?*, *Bathmopterus*, and small *Loxonema*. Carbonized plant fragments from a similar siltstone-shale unit in Hoonah has been identified as the H-branching system of a zosterophyll.

Although biostratigraphic control for many outcrops is still lacking, we speculate that the rocks exposed in the Hoonah area represent a Silurian shelf to basin transition with a relatively steep margin. The Kennel Creek Formation at its type area is composed of *Amphipora* and *Pycinodesma*,and was deposited in a shallow, shelf environment. One quarry exposes massive, metamorphosed limestone with sparry calcite stromatactis structures. The fine detail of the texture has been destroyed, but the overall structure is very unusual, and looks identical to the late Silurian reefal rocks elsewhere in the Alexander and Farewell terranes of southern Alaska and the Urals. Facies interpreted as fore-reef and slope deposits contain varying amounts of limestone. Several quarries expose thick-bedded to massive limestones with a brecciated texture, often with a yellowish matrix. Northeast of Hoonah are tabular limestone breccias, sedimentary folds and large, channel-like lenses. The dominance of limestone clasts suggests a proximal slope facies, close to the carbonate shelf. Point Augusta Formation has previously been interpreted as a basinal, clastic turbidite fan deposit that grades into the Kennel Creek Formation. This same facies relationship extends northward into Glacier Bay, where late Silurian, shallow-water, shelfal carbonate rocks of the Willoughby Limestone grade eastward into deeper-water, fore-reef and slope deposits of the Tidal Formation.