

The Siberian Origin of the Alexander Terrane of Southeast Alaska

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Our on-going studies of the paleontology and stratigraphy of the Alexander terrane of Southeast Alaska have focused on Silurian-Devonian faunas of this region in order to further resolve the paleobiogeographic affinities and origin of this well-known allochthonous terrane. Shelly faunal groups such as brachiopods, gastropods, bivalves, rugose corals, and sphinctozoan sponges have proven to be very useful in this regard. Upper Silurian (mostly Ludlow) brachiopods and gastropods from the Heceta Limestone on western Prince of Wales Island and neighboring smaller islands as well as from the Willoughby Limestone to the north in Glacier Bay are strictly non-Laurentian (non-North American) in character. The brachiopods, dominated by large pentameroid genera such as *Brooksina*, *Cymbidium*, *Kirkidium*, and *Harpidium*, are similar at the genus level with faunas of Siberia, the Urals, and central Asia. At the species level, however, the ties are clearly indicative of very close alliance with those of Northeast Russia (Omulevka terrane of the Kolyma region). Gastropods are less clear as to their affinities, but show closest affinities to Eurasian taxa. The Upper Silurian bivalves are dominated by the genus *Pycinodesma* in the carbonate platform facies. This genus to date is known only from the Alexander terrane. Aphrosalpingid sponges are abundant in the Upper Silurian microbial reef buildups of the Alexander terrane (as well as the Farewell terrane of SW Alaska), and are known elsewhere only from the Urals and the Salair region of Siberia.

Lower and Middle Devonian brachiopod faunas of the Alexander terrane (from both the Wadleigh Limestone on Prince of Wales Island and the Black Cap Limestone of Glacier Bay) consistently show their strongest affinities with those of Siberia (especially to Northeast Russia (i.e. Kolyma region), Taimyr, and the Salair region), as well as with the Farewell terrane of Southwest Alaska. Lower Devonian (Emsian) gastropods from the Alexander terrane are known primarily from Kasaan Island (east side of Prince of Wales Island) and show close affinities with similar age faunas of the Barrandian of the Czech Republic and the Carnic Alps (Austria-Italy border). Lower Middle Devonian (Eifelian) gastropods from the Wadleigh Limestone and Black Cap Limestone at the species level are nearly all identical with species known from the Cheeneetuk Limestone of the Farewell terrane of Southwest Alaska (but unknown in Laurentian rocks of this age). Typical genera include the genera *Cheeneetukia*, *Astralites*, *Kitakamispira*, *Paffrathopsis*, and *Euryzone*. Also present in association with these gastropod-rich collections is the dasyclad alga genus *Coelotrochium*, found in great abundance in Eifelian age strata of the Farewell and Livengood terranes of interior Alaska, but unknown in Laurentian rocks.

In summary, the paleobiogeographic affinities of Alexander terrane faunas of Silurian and Devonian age clearly point to a non-Laurentian origin. Their closely similar character with those of Siberia, especially with Northeast Russia (Kolyma region), clearly indicate that the

Alexander terrane, as well as the faunally allied Farewell terrane of Southwest Alaska, originated as blocks rifted from this region, probably during an major rifting event which occurred during Late Devonian time.