

AMMONOID ASSEMBLAGES IN THE SANTONIAN AGE OF HOKKAIDO, JAPAN, WITH SPECIAL REFERENCE TO COVARIANCE OF SHELL SHAPE AND MODE OF OCCURRENCE OF DESMOCERATIDAE

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The Upper Cretaceous sequence of the Yezo Group in Hokkaido, Japan, yields well-preserved and taxonomically diversified ammonoid assemblages at various horizons. The Santonian strata in Haboro-Kotanbetsu-Tappu areas, northwestern Hokkaido consist mainly of bioturbated, fine to coarse siltstone and silty sandstone, with frequent intercalation of sandstone (ca. 5-100mm), in which such bivalves as *Parvamussium* sp. and *Nanonavis* sp. occur commonly. The litho- and biofacies of the strata suggest outer shelf environments. In the study areas, both nearshore facies characterized by frequent intercalation of sandstone and contemporaneous offshore facies characterized by rare intercalation of sandstone are exposed. Thus, we can recognize the lateral change of the various ammonoid assemblages in association with that of lithofacies.

In contrast to the heteromorph ammonites which commonly occur in fragmental condition, almost all normally coiled ammonites except for *Hypophylloceras* retain a complete body chamber in which jaw remains are sometimes preserved *in situ*, suggesting that post-mortem transportation is rare in these ammonites (in the case of *Hypophylloceras*, see Maeda and Seilacher, 1996).

The assemblages, characterized by the abundance of *Baculites*, are recognized occasionally in the bioturbated coarse siltstone or silty sandstone. These assemblages correspond with the *Baculites* facies of Matsumoto and Obata (1962), representing a nearshore, quiet environment. The frequency of occurrence of relatively smooth or weakly ornate ammonites (Phylloceratina, Lytoceratina and Desmocerataceae) increases from the nearshore to the offshore facies. This tendency is especially conspicuous in the Desmocerataceae. In the Tethyan ammonoid Desmocerataceae (Page, 1996), *Damesites sugata* (Forbes), *D. damesi* (Jimbo) and *D. semicostatus* Matsumoto are distributed in the Santonian of the study areas. *D. sugata* and *D. damesi* sometimes co-occur in the same concretions. *D. damesi* exhibits fairly wide individual variation among samples of population. Some specimens of them resemble *D. sugata* in overall shell shape, when the specimens co-occur with *D. sugata*. Some other specimens exhibit the typical shell shape of *D. damesi*, when the specimens occur solitarily. In contrast, *D. semicostatus* occurs locally and never co-occur with other species of *Damesites*. Moreover, this species occurs more abundantly and grows larger than the other two species of *Damesites* listed above. The species composition of *Damesites* of local assemblages is therefore changeable from horizon to horizon and/or from area to area. Covariance of shell shape and mode of occurrence is suggested in each species.

Maeda, H. and Seilacher, A., 1996, Ammonoid taphonomy, in: Ammonoid Paleobiology (N. Landman, K. Tanabe and R. Davis eds.), Plenum Press, New York and London, pp. 543-578.

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