ELSEVIER

Cretaceous Research 28 (2007) 363–391

CRETACEOUS RESEARCH

www.elsevier.com/locate/CretRes

Barremian–Aptian (Early Cretaceous) ammonoids from the Choshi Group, Honshu (Japan)

Ikuwo Obata [a], Masaki Matsukawa [b,*]

[a] *3-23-1, Soshigaya, Setagayaku, Tokyo 157-0072, Japan*
[b] *Department of Environmental Sciences/Science Education, Tokyo Gakugei University, Koganei, Tokyo 184-8501, Japan*

Received 14 July 2005; accepted in revised form 19 June 2006
Available online 28 January 2007

Abstract

So far, our knowledge of Barremian and Aptian ammonoid faunas from Japan has been insufficient to allow global correlation and palaeogeographic interpretation. We describe here 11 species of Barremian, and nine of Aptian age, from the Choshi Group in Chiba Prefecture (Choshi Peninsula, Honshu). These include a new genus and species of neocomitid (*Neocomitoides minimus*), new species of *Calliphylloceras* (*C. tsudai*) and *Pulchellia* (*P. minima*) from the Barremian, and new species of *Neosilesites* (*N. hagiwarai*) and *Tropaeum* (*T. ozakii*) of Aptian age. Added to these are five specifically indeterminate taxa from the Choshi Group, and a discussion of the faunal similarity between Choshi and other regions in the world using the Nomura-Simpson Coefficient and the number of genera in common. The new Choshi fauna reveals close ties with assemblages known from the Mediterranean (Tethyan realm).
© 2007 Elsevier Ltd. All rights reserved.

Keywords: Barremian; Aptian; Ammonoids; Choshi Group; Japan; Faunal analysis

1. Introduction

Biozonations of Lower Cretaceous deposits in Japan are based mainly on ammonoids; previous authors have compared these zones with equivalent schemes employed in western Europe, North America and other regions. To date, our knowledge of the Lower Cretaceous in Japan is rather limited, although there have been a number of significant contributions (e.g., Obata and Matsumoto, 1977; Matsumoto et al., 1982).

The Choshi Group in the Kwanto area is an important Lower Cretaceous unit for which an ammonoid biozonation has been established. Shimizu (1931) was the first to record four species (of which two were new) from this unit, within the framework of a broader description of Japanese Early Cretaceous ammonoids.

Obata et al. (1975) subdivided strata referred to the Choshi Group into five formations; dating based on ammonoids indicates a Barremian–early Late Aptian age. Subsequently, Obata and Matsukawa (in Obata et al., 1982) established a detailed lithostratigraphic scheme and an ammonoid biozonation, while Maiya and Inoue (in Obata et al., 1982) described some of the foraminiferal assemblages, documenting their stratigraphic position.

Obata and Matsukawa (1984b) added *Olcostephanus* (*Neoastieria*) *cadoceroides* (Karakasch, 1907) to the list of ammonoids known from the Choshi Group; however, it should be noted that *Neoastieria* Obata and Matsukawa, 1984b is preoccupied by *Neoastieria* Egoian, 1969, and is questionably regarded as synonymous with *Parasaynoceras* Breistroffer, 1947 (see Wright et al., 1996). Later, Matsukawa (1987) described the early shell morphology of the ancyloceratid *Karsteniceras* and discussed its significance with respect to the phylogeny of Cretaceous heteromorphs. However, most of the ammonoids from the Choshi Group were not described in detail. The main aim of the present paper is to document

* Corresponding author.
E-mail address: matsukaw@u-gakugei.ac.jp (M. Matsukawa).

0195-6671/$ - see front matter © 2007 Elsevier Ltd. All rights reserved.
doi:10.1016/j.cretres.2006.06.004

some of the ammonoid assemblages from this unit, and record their stratigraphic position. Others will be described in forthcoming papers. We also discuss the global distribution of Barremian and Aptian ammonoids, by analysing the faunal similarity between Choshi and other regions, using the Nomura-Simpson Coefficient and the number of genera and species in common.

The majority of specimens illustrated are deposited in the Department of Paleontology, National Science Museum, Tokyo (NSM); others are in the Geological Section of the Department of Science Education, Tokyo Gakugei University, Koganei, Tokyo (TGUSE). Other abbreviations include: GSM, Geological Survey Museum, London; IGPS, Department of Geology and Paleontology of Tohoku University, Sendai; RGM, Nationaal Natuurhistorisch Museum, Leiden [formerly Rijksmuseum van Geologie en Mineralogie].

In general, morphological terminology follows Arkell (1957), and adjectives used in descriptions are in accordance with the definitions of Matsumoto (1988).

2. Geological setting

The Choshi Group, of Barremian–Aptian age, crops out along the eastern coastline of the Choshi Peninsula, Chiba Prefecture (Fig. 1). According to Obata et al. (1982), the Choshi Group comprises clastic rocks of almost 935 m in total thickness, and is subdivisible lithologically into five units. In ascending order, these are the Ashikajima, Kimigahama, Inubouzaki, Toriakeura and Nagasakihana formations (Fig. 2).

The terrigenous clastic deposits of the Choshi Group accumulated on a storm-dominated shelf sea overlying the pre-Barremian basement (Katsura et al., 1984), and the Ashikajima, Kimigahama, Inubouzaki and Toriakeura formations document shoreface to shelf environments. The Nagasakihana Formation comprises turbidite deposits trapped in the intrashelf basin.

Barremian ammonoids listed herein have been collected from the Kimigahama Formation at nine localities (Fig. 1) from five distinct levels (Fig. 2). Typical species include *Eogaudryceras* (*Eotetragonites*) aff. *raspaili*, *Barremites otsukai* and *Crioceratites* (*Crioceratites*) *emerici*. Ammonoids of Early Aptian age come from three levels within the Inubouzaki Formation at three localities; typical taxa include *Tropaeum* (*T.*) aff. *benstedi*, *Australiceras* (*A.*) aff. *gigas* and *Dufrenoyia* cf. *sanctorum*. Late Aptian material derives from three levels within the Toriakeura Formation at three localities, and includes *Cheloniceras* (*C.*) cf. *proteus* and *Epicheloniceras* sp.

3. Systematic palaeontology

Abbreviations. D, diameter; U, umbilicus (expressed as a percentage of diameter); H, whorl height; W, whorl width; W/H, width/height ratio. For heteromorphs: Dn, maximum diameter of tight spire; Dx, diameter of loose spire; L, total length; Un, umbilicus of tight spire; Ux, maximum umbilical gap.

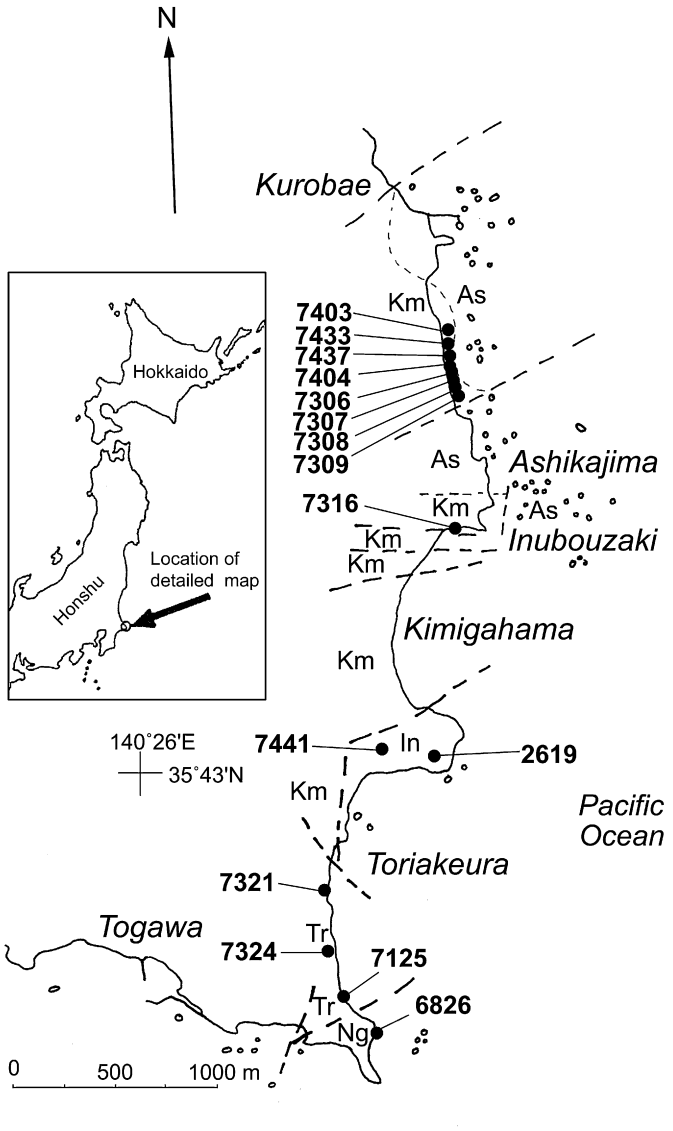

Fig. 1. Simplified map showing localities exposing strata assigned to the Choshi Group. Abbreviations: As, Ashikajima Formation; In, Inubouzaki Formation; Km, Kimigahama Formation; Ng, Nagasakihana Formation; Tr, Toriakeura Formation.

Order: Ammonoidea von Zittel, 1884
Suborder: Phylloceratina Arkell, 1950
Superfamily: Phylloceratoceae von Zittel, 1884
Family: Phylloceratidae von Zittel, 1884
Subfamily: Phylloceratinae von Zittel, 1884
Genus *Phyllopachyceras* Spath, 1925

Phyllopachyceras sp.
Figs. 3H–K, 5AA$_{1, 2}$

Material. TGUSE-MM 5027 and 5028 (both H. Tsuda Coll.), locality 7308 (Kimigahama), middle mudstone unit of the Kimigahama Formation.

Dimensions (in mm). Specimen TGUSE-MM 5027: D, 10.4 (1); U, 0.8 (0.077); H, 5.7; W, 5.0; W/H, 0.88.

Download English Version:

https://daneshyari.com/en/article/4747394

Download Persian Version:

https://daneshyari.com/article/4747394

Daneshyari.com