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GEOLOGICAL AGE AND CORRELATION OF THE VERTEBRATE-BEARING HORIZONS IN THE TETORI GROUP

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ABSTRACT

Correlation and age of the vertebrate-bearing horizons in the Tetori Group, which is representative sedimentary succession of the Middle Jurassic to Early Cretaceous in the Inner Zone of the Southwest Japan, have been reexamined with new data. The Tetori Group is divided into the Kuzuryu, Itoshiro, and Akaiwa subgroups in ascending order. The Kuzuryu Subgroup referred to Middle to Late Jurassic on the basis of marine molluscan fossils. The Itoshiro Subgroup contains Late Hauterivian to Early Barremian ammonite, and the upper part of the subgroup yields non-marine molluscan fossils (Tatsukawa type Fauna) indicating Hauterivian. The Akaiwa Subgroup conformably overlies the Itoshiro Subgroup and its upper part yields the Late Barremian non-marine fauna (Sebayashi type Fauna). Molluscan assemblages and zircon fission track dating of tuff indicate that terrestrial and freshwater vertebrate fossils including dinosaurs of the Tetori Group are found in the Hauterivian, Late Barremian, and Aptian to Early Albian strata.

Key words: Tetori Group, Jurassic, Lower Cretaceous, stratigraphy, fission track dating, dinosaur

藤田将人（2003）手取層群の脊椎動物化石産出層の地質年代と対比について．福井県立恐竜博物館紀要 2：3–14.

西南日本内帯の代表的中部ジュラ—下部白亜系である手取層群の対比および時代論について，近年発表されているデータを加えて再検討を行った．手取層群は下位から九頭竜，石徹白，赤岩亜層群からなる．最下部の九頭竜亜層群は海棲軟体動物化石によりジュラ紀中期～後期とされている．石徹白亜層群は Hauterivian 後期～Barremian 前期のアンモナイトを含み，その上部は Hauterivian の非海生軟体動物化石（立川型ファウナ）を産出する．赤岩亜層群は石徹白亜層群を整合に覆い，その上部層から Barremian 後期の瀬林型ファウナを産出する．軟体動物化石群および凝灰岩中ジルコンのフィッション・トラック年代測定により，手取層群の恐竜化石を含む陸上・淡水生脊椎動物化石は Hauterivian，Barremian 後期および Aptian～Albian 前期の地層から産出している．

INTRODUCTION

The Tetori Group of the Inner Zone of the Southwest Japan records a terrestrial ecosystem of Lower Cretaceous and attracts worldwide attention (e.g. Azuma and Tomida, 1995; Evans et al., 1998; Manabe et al., 2000a; Matsuoka et al., 2002). It is still difficult to correlate among sedimentary basins and to determine precise geological age, because of scattered distribution of basins and scarcity of key beds and index fossils.

Recently, the occurrence of dinosaur remains and footprints from the Tetori Group was reported (e.g. Azuma et al., 1992; Hasegawa et al., 1995; Matsukawa et al., 1997b; Azuma and Currie, 2000) and dinosaur excavations have been carried out (e.g. Dinosaur Excavation Party of the Fukui Prefectural Museum, 1991; Gifu-ken Dinosaur Research Committee, 1993; Manabe and Barrett, 2000; Toyama Dinosaur Research Group, 2002). However, the stratigraphical correlation and geological age among vertebrate fossil-bearing horizons have not been clarified.

The purpose of this paper is to discuss the stratigraphy and geological age of the Tetori Group, particularly of vertebrate fossil-bearing horizons, and to contribute toward the future study.

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STRATIGRAPHY OF THE TETORI GROUP

The Middle Jurassic to Early Cretaceous Tetori Group is distributed in the Hakusan and Jinzu Regions in Hokuriku, Central Japan (Maeda, 1961a). The Tetori Group is divided into the Kuzuryu, Itoshiro, and Akaiwa subgroups in ascending order. Although the Omichidani Formation was originally included in the Tetori Group (Maeda, 1961a), Tsukano (1969) distinguished the formation from the Tetori Group as the Asuwa Group. This paper follows his opinion.

Stratigraphy and correlation of the Tetori Group between districts are shown in the Fig. 1, mainly based on Maeda (1961a) and Yamada (1988). Recently Kusuhashi et al. (2002) reviewed the stratigraphy of the Tetori Group in the Hakusan Region. New stratigraphic data are also shown and correlations among the basins are slightly modified from Maeda (1961a), based on these new data.

GEOLOGICAL AGE AND CORRELATION OF THE TETORI GROUP

The age and correlation of the Tetori Group are discussed with new data in this chapter. Proposed correlation among the selected districts is summarized in Fig. 2.

Kuzuryu Subgroup

The age of the Kuzuryu Subgroup has not been revised since the 1970's. The Kuzuryu Subgroup is composed of marine and non-marine deposits. The lower part of this subgroup is non-marine origin in some districts (Fig. 1-B, F, J). The precise age of start of deposition of the Tetori Group is difficult to determine due to lack of index fossils from the lower part. Marine molluscan fossils, reliable for dating, are found in the upper part of this subgroup. The Kaizara Formation (Fig. 1-A) is correlated with the lower part of the Mitarai Formation in Shokawa district (Fig. 1-F) yielding ammonites (Sato et al., 1963; Sato and Kanie, 1963) which indicate Callovian in age. The Yambarazaka Formation (Fig. 1-A) and Kiritani alternation (Fig. 1-L) yield Oxfordian ammonites (Maeda, 1952a; Maeda, 1961a; Sato et al., 1963). Maeda (1962c) reported *Nipponitrigonia sagawai* from the Kiritani alternation, which is also obtained from the Middle to Upper Jurassic in the Sakawa district, Kochi Prefecture (Kobayashi, 1957b). As Hayami (1960) pointed out that the upper part of the Mitarai Formation is younger than the Kaizara Formation and could be correlated with the Oxfordian Yambarazaka Formation (Fig. 1-A) based on bivalve fossils. The Sugisaki Formation in Furukawa district (Fig. 1-J) yields *Inoceramus furukawensis* which closely resembles *I. maedae* from the Mitarai Formation in Shokawa district, and is considered as Oxfordian in age (Maeda, 1962b). Therefore, the Yambarazaka Formation, upper part of the Mitarai Formation, Sugisaki Formation, Kiritani alternation, and Arimine shale (Fig. 1-M) might be coeval. However, *Inoceramus* sp. cf. *I. maedae* was found in the Itoshiro Subgroup in the east of Izumi (Fujita et al., 1998) (Fig. 1-D). There is a possibility that the range of *I. maedae* could be longer than previously thought. It needs further consideration to discuss the geological age of the Kuzuryu Subgroup with *Inoceramus*. The age of the upper limit of the Kuzuryu Subgroup is not clarified in detail.

Itoshiro Subgroup

Because the Itoshiro Subgroup consists mainly of non-marine deposits with few index fossils, it is difficult to correlate the formations. The lowest part of the Itoshiro Subgroup yields marine molluscan fossils at the Itoshiro River (*Vaugonia yambarensis*; Fig. 1-A) (Kobayashi, 1956) and Shokawa (belemnite; Fig. 1-F) districts (Kumon and Umezawa, 2001). Recently, *Inoceramus* sp. cf. *I. maedae*, hitherto described as Jurassic species, was collected from the Kamihambara Formation in the east of Izumi (Fig. 1-D) (Fujita et al., 1998). Goto (2001) reported Late Hauterivian to Early Barremian ammonoid from the Itoshiro Subgroup in the Uchinami district (Fig. 1-C). The formation yielding the ammonoid would correspond to the Kamihambara Formation. The lower part of the Kuwajima Formation (Fig. 1-H) yields brackish to marine molluscan fossils such as *Crassostrea* sp., *Isognomon* sp., and *Tetoria yokoyamai* (Tamura, 1990). A dentary of fish (Pachycormidae) (Yabumoto, 2000) and limuloid tracks (*Kouphichnium* isp.) (Matsuoka et al., 2001a), which indicate influences of marine conditions, are reported from the Kuwajima Formation (Fig. 1-H). This marine influenced horizon could be correlated widely within the Itoshiro Subgroup as maximum transgressive phase (Kamihambara stage). The upper part of the Kuwajima Formation yields freshwater molluscan fossils as *Nipponoaia tetoriensis*, *Nagdongia soni* (Maeda, 1958a, 1962d; Tamura, 1990). *Myopholas* sp. cf. *M. semicostata* is collected from a float of the Itsuki Formation (Fig. 1-D) (Fujita, 2002), which has been reported from the Ryoseki Formation of the Monobegawa Group and its correlatives (Tashiro, 1994). The Itsuki (Fig. 1-A, C, D), Kuwajima, and upper part of the Okurodani Formations are correlated with the Hauterivian Ryoseki Formation of the Monobegawa Group in the Outer Zone of Southwest Japan on the basis of the bivalve fauna (Tatsukawa type fauna) which is characterized by *Hayamina naumani*–*Unio ogamigoensis* Assemblage (Kozai et al., 2002).

Tochio Formation in the Tochio district (Fig. 1-K) yields non-marine molluscan fossils (*Isodomella shiroiensis*, *Paracorbicula sanchuensis*), which represent the "Ryoseki Fauna" in the Outer Zone of Southwest Japan (Maeda, 1958b, 1959; Matsumoto et al., 1982). It should be correlated with the Hauterivian Ryoseki Formation. This fauna is not found in other parts of the Tetori Group.

Zircon fission-track (FT) data was reported as 135±7 Ma for the crystal tuff of the Okurodani Formation (Fig. 1-F) (Gifu-ken Dinosaur Research Committee, 1993) and 128±8 Ma for tuffaceous sandstone of the Nakanomatanokkoshi sandstone in the Kamioka district (Fig. 1-N) (Gifu-ken Dinosaur Fossil Excavation Party, 1998).

The Itoshiro Subgroup overlies the Kuzuryu Subgroup unconformably in the areas, such as Itoshiro and Mana River, Uchinami River, Jinzu River, and Arimine districts (Fig. 1), while sedimentation succeeded from Middle Jurassic to Early Cretaceous without unconformity in the Shokawa district. Thus the age of the lower part of the Itoshiro Subgroup might be different in each district (Fig. 2). In the case of unconformable contact, the base of the Itoshiro Subgroup it is assigned tentatively to the base of the Ryoseki Formation, as suggested by Tashiro and Okuhira (1993).

Akaiwa Subgroup

The Akaiwa Subgroup overlies the Itoshiro Subgroup conformably in all districts (Fig. 1).

The lower part of the Akaiwa Subgroup is barren of fossils except for some dinosaur footprints. The Kitadani Formation (Fig. 1-H, I) of the uppermost part of the Akaiwa Subgroup yields some non-marine molluscan fossils reliable for determining geological age. The Kitadani non-marine fauna has an affinity with that of the Lower Cretaceous Naktong–Wakino series which is distributed in South Korea and North Kyushu (Maeda, 1962a). The non-marine molluscan fossils include so-called TPN elements such as *Trigonioides* (*Wakinoa*) *tetoriensis*, *Plicatounio naktongensis*, *Nagdongia soni*, *Pseudohyria matsumotoi*, and *Nippononaia tetoriensis* (Tamura, 1990). Tashiro and Okuhira (1993) reported *Trigonioides* (*Wakinoa*) *tetoriensis*, which is characteristic species of the TPN fauna, from the upper part of the Tatsukawa Formation of the Monobegawa Group, and suggested that TPN fauna be found in Late Hauterivian to Barremian (Fig. 2). Isaji (1993) reported *Nippononaia ryosekiana*, which indicates Late Barremian to Early Aptian in age, from the Kitadani Formation. *N. ryosekiana* is a characteristic species of the Late Barremian Sebayashi type fauna of the Monobegawa Group in the Outer Zone of Southwest Japan (Kozai et al., 2002). Thus it is likely that the Kitadani Formation could be assigned to Barremian in age on the basis of occurrences of *N. ryosekiana* and TPN fauna.

In recent years, absolute age of tuffaceous rock has been determined in several districts. Zircon FT ages were obtained as 127±8 Ma and 106±7 Ma for tuffaceous rocks of the Bessandani Formation (Fig. 1-F) (Gifu-ken Dinosaur Research Committee, 1993). FT data, which was measured on zircon crystals separated from tuffaceous sandstone of the Wasabu alternation in the Kamioka district (Fig. 1-N), indicates 119±6 Ma (Gifu-ken Dinosaur Fossil Excavation Party, 1996) and 125±10 Ma (Gifu-ken Dinosaur Fossil Excavation Party, 1997). Board of Education of Toyama Prefecture (2003) reported a fission track age of 113±6 Ma (Aptian–Early Albian) for greenish tuff which covers the footprint horizon at the dinosaur footprint site of the Jinzu River district in Ohyama Town (Fig. 1-L). The upper part of the Akaiwa Subgroup is characterized by intercalation of the same kind of greenish tuff in the Hakusan and Jinzu regions. Therefore, the strata yielding footprints would correspond to the Upper Akaiwa Subgroup both chronologically and lithologicaly, though Matsukawa et al. (1997b) regarded the same strata as the Itoshiro Subgroup (Inotani alternation of the Nagatogawa Formation). The Shiroiwagawa Formation also contains reddish or greenish tuff in the Kamiichi River district (Fig. 1-O). The dinosaur track site in Ohyama is regarded tentatively as the Wasabu alternation in this paper, in spite of that there is no strata corresponding to the Shiroiwagawa Formation in the Jinzu River district.

Recently carbon-isotope stratigraphy was applied to the study of the Tetori Group (Hasegawa and Yoshida, 1999). According to them, the Minamimatadani conglomerate and lower part of the Wasabu alternation in the Kamiichi River district are Kimmeridgian to early Tithonian in age, and the middle part of the Wasabu alternation is younger than Berriassian. These data is not concordant with the age obtained from other methods.

The Tetori Group is overlain or intruded by around 100 Ma volcanic or plutonic rocks (Gifu-ken Dinosaur Research Committee, 1993; Tanase et al., 1994; Shibata and Uchiumi, 1995; Gifu-ken Dinosaur Fossil Excavation Party, 1997; Tomioka et al., 2000; Yamada et al., 2001).

AGE OF VERTEBRATE FOSSIL-BEARING HORIZONS OF THE TETORI GROUP

Kuzuryu Subgroup

A reptile skeleton (*Tedorosaurus asuwaensis*) was found from the Sakaidera Formation in the Asuwa district (Fig. 1-B) (Shikama, 1969). The Sakaidera Formation is correlated with the Callovian Kaizara Formation of the Kuzuryu Subgroup (Maeda, 1961a). This is only record of terrestrial vertebrate from the Kuzuryu Subgroup. Recently, marine plesiosaur(?) tooth was reported from the Kiritani alternation, which is assigned to the Oxfordian, in the Jinzu River district (Fig. 1-L) (Board of Education of Toyama Prefecture, 2003).

Itoshiro Subgroup

The oldest bird tracks (*Aquatilavipes izumiensis*) in Asia were collected from the Itsuki Formation (Fig. 1-A) (Azuma et al., 2002). Manabe (1999) reported a tyrannosaurid tooth from the same formation (Fig. 1-D).

Abundant vertebrate remains including dinosaur were

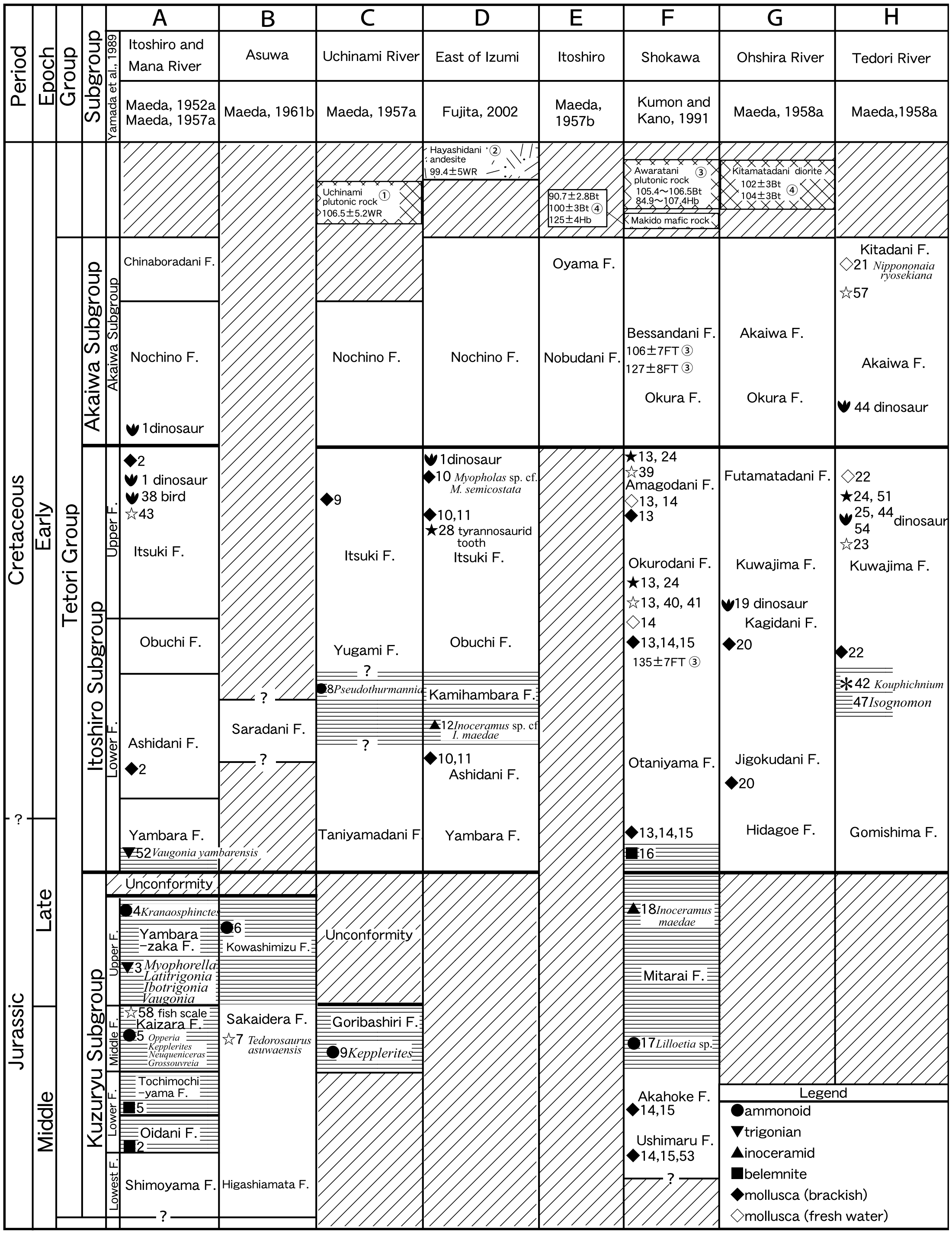
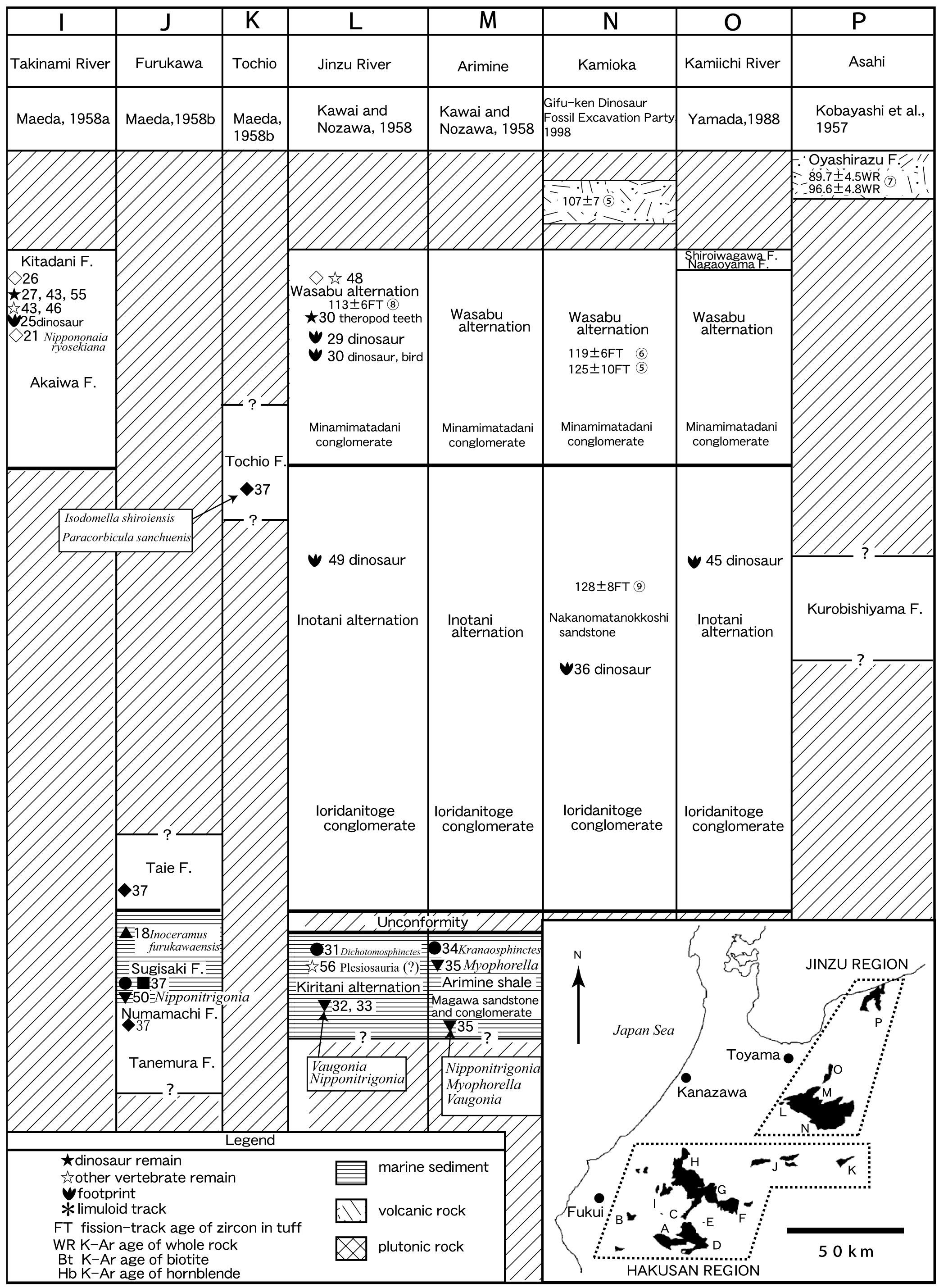


FIGURE 1. Stratigraphy and correlation of the Tetori Group. The references are given below.
1: Azuma et al. (1992), 2: Maeda (1952a), 3: Kobayashi (1957a, b), Maeda (1963a), 4: Maeda (1952a), Sato et al. (1963), 5: Sato et al. (1963), 6: Maeda and Hori (1950), 7: Shikama (1969), 8: Goto (2001), 9: Maeda (1957a), 10: Fujita (2002), 11: Maeda (1957c), 12: Fujita et al. (1998), 13: Gifu-ken Dinosaur Research Committee (1993), 14: Matsukawa and Nakada (1999), 15: Maeda (1952b), 16: Kumon and Umezawa (2001), 17: Sato and Kanie (1963), 18: Hayami (1960), 19: Kunimitsu et al. (1990), Shikano et al. (2001), 20: Maeda (1958a), 21: Isaji (1993), 22: Maeda (1958a), 23: Evans and Manabe (2000), Hirayama (2000), Manabe et al. (2000), Matsuoka (2000), 24: Hasegawa et al. (1995), 25: Azuma and Takeyama (1991), 26: Maeda (1962a; 1963b), 27: Azuma and Currie (2000), 28: Manabe (1999), 29: Matsukawa et al. (1997), 30: Toyama Dinosaur Research Group (2002), 31: Maeda (1958c), 32: Kobayashi (1957b), 33: Maeda (1962c), 34: Maeda and Takenami (1957), 35: Maeda (1966), 36: The Gifu-ken Dinosaur Fossil Excavation Party (1999), 37: Maeda (1958b), 38: Azuma et al. (2002), 39: Unwin et al. (1996),



40: Evans and Manabe (1999), 41: Cook et al. (1998), 42: Matsuoka et al. (2001a), 43: Azuma and Tomida (1995), 44: Azuma et al. (1991), 45: Goto (1993), 46: Kobayashi (1998), 47: Tamura (1990), 48: Shigeno (in press), 49: Matsukawa et al. (2002), 50: Maeda (1962b), 51: Manabe et al. (2000a), Barrett et al. (2002), 52: Maeda (1963a), 53: Komatsu et al. (2002), 54: Matsuoka et al. (2001b), 55: Kobayashi and Azuma (2003), 56: Board of Education of Toyama Prefecture (2003), 57: Hirayama (2002b), Yabumoto (2002), 58: Yasuno (1994).
① Tomioka et al. (2000), ② Tanase et al. (1994), ③ Gifu-ken Dinosaur Research Committee (1993), ④ Shibata and Uchiumi (1995), ⑤ Gifu-ken Dinosaur Fossil Excavation Party (1997), ⑥ Gifu-ken Dinosaur Fossil Excavation Party (1996), ⑦ Yamada et al. (2001), ⑧ Board of Education of Toyama Prefecture (2003), ⑨ Gifu-ken Dinosaur Fossil Excavation Party (1998)

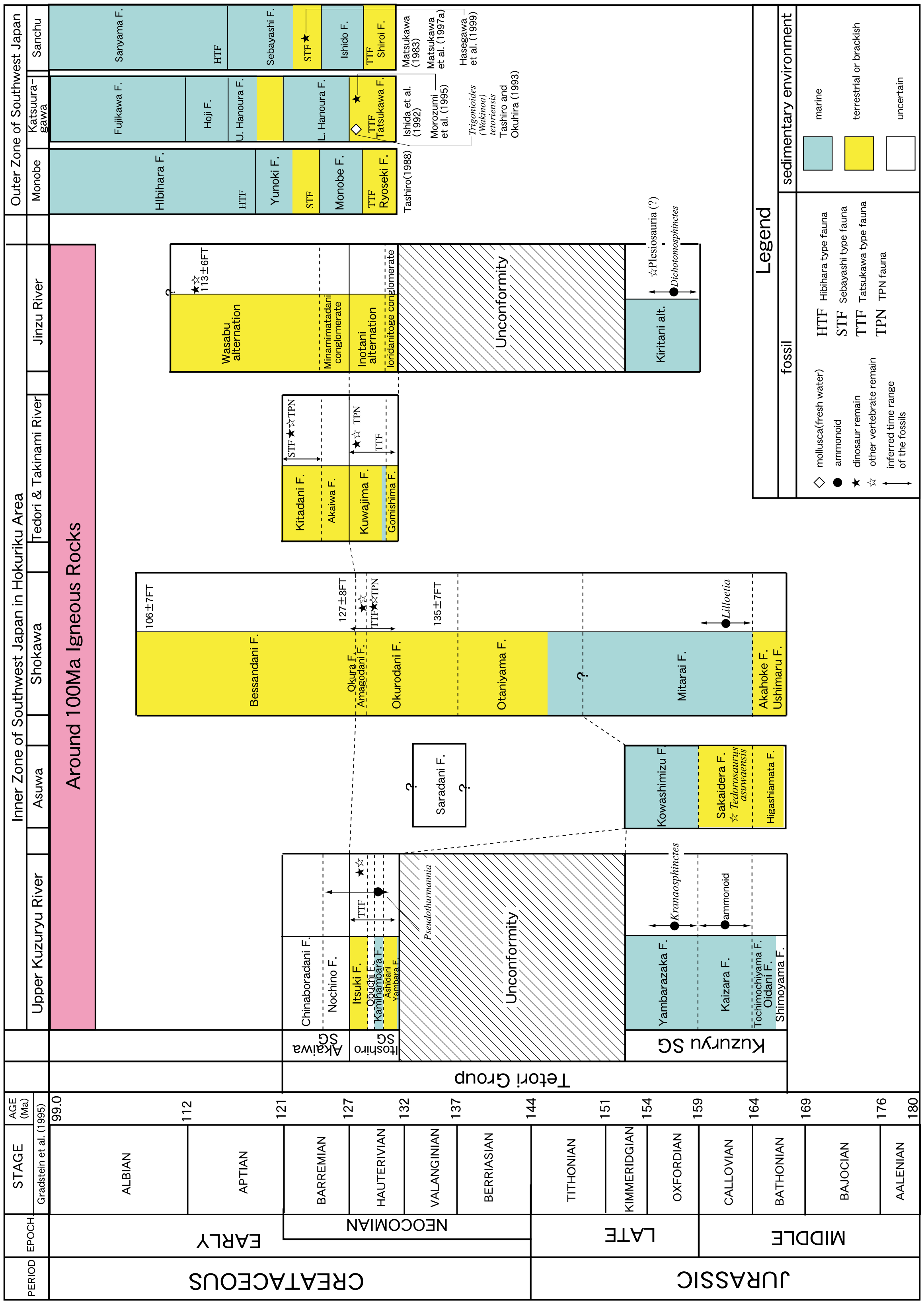


FIGURE 2. Tentative geological age and correlation of the Tetori Group, compared with the strata of the Outer Zone of Southwest Japan.

discovered from the Okurodani Formation (Fig. 1-F) (Gifu-ken Dinosaur Research Group, 1992; Gifu-ken Dinosaur Research Committee, 1993; Hasegawa et al., 1995; Evans et al., 1998; Evans and Manabe, 1999) and Amagodani Formation (Fig. 1-F) (Gifu-ken Dinosaur Research Group, 1992; Gifu-ken Dinosaur Research Committee, 1993; Unwin et al., 1996).

The Kuwajima Formation (Fig. 1-H) also yields various vertebrate remains (birds, dinosaurs, pterosaurs, mammal-like reptiles, mammals, lizards, turtles, amphibians, and fishes) (Hasegawa et al., 1995; Evans and Manabe, 2000; Hirayama, 2000; Manabe et al., 2000a; Manabe et al., 2000b, Matsuoka, 2000; Unwin and Matsuoka, 2000; Yabumoto, 2000; Matsuoka et al., 2002；Barrett et al., 2002) and dinosaur footprints (Azuma and Takeyama, 1991; Azuma et al., 1991; Matsuoka et al., 2001b).

Shikano et al. (2001) reported dinosaur footprints, which are identified as ornithopods, from the Kagidani Formation in Shirakawa Village (Fig. 1-G). Dinosaur footprints were discovered from the Inotani alternation in the Joganji River district (Fig. 1-O) (Goto, 1993), Kamioka (Fig. 1-N) (Gifu-ken Dinosaur Fossil Excavation Party, 1999), and Hosoiri (Fig. 1-L) (Matsukawa et al., 2002).

Akaiwa Subgroup

Dinosaur footprints were found in the Nochino formation (Fig. 1-A) (Azuma et al., 1992) and Akaiwa Formation (Fig. 1-H) (Azuma et al., 1991).

Abundant vertebrate remains (plesiosaurs, turtles, crocodiles, dinosaurs, and fishes) were obtained from the Kitadani Formation (Fig. 1-H, I) (Azuma and Tomida, 1995; Azuma and Currie, 2000; Goto et al., 2002; Hirayama, 2002a, b; Yabumoto, 2002, Kobayashi and Azuma, 2003).

Dinosaur and/or bird footprints and theropod teeth were discovered at the Ohyama Town (Fig. 1-L) (Matsukawa et al., 1997b; Toyama Dinosaur Research Group, 2002). As mentioned above, the strata may correspond to the Upper Akaiwa Subgroup. Turtle carapaces and fish scales were obtained from the Wasabu alternation of this district (Shigeno, in press).

Azuma (1991) proposed the Tetori dinosaur fauna, which consists of the Shiramine dinosaur fauna from the Itoshiro Subgroup and the Katsuyama dinosaur fauna from the Akaiwa Subgroup. There are at least two horizons yielding dinosaur remains in the Tetori Group as well as the Lower Cretaceous in the Outer Zone of Southwest Japan during Hauterivian to Barremian (Fig. 2). Dinosaur fossil found in the Wasabu alternation in Ohyama Town (Fig. 1-L) may be younger than those of the Kitadani Formation, based on the absolute age (113±6 Ma) (Board of Education of Toyama Prefecture, 2003) (Fig. 2). If it is true, this indicates third horizon containing dinosaur materials in the Tetori Group, which may be time-equivalent to the Miyako Group (late Aptian – early Albian), northeast Japan (Hasegawa et al., 1991).

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REFERENCES

Azuma, Y. 1991. Early Cretaceous Dinosaur Fauna from the Tetori Group, Central Japan — Research of Dinosaurs from the Tetori Group (1) — . Professor Shizuka Miura Memorial Volume: 55 – 69.*

Azuma, Y., Y. Arakawa, Y. Tomida and P. J. Currie. 2002. Early Cretaceous bird tracks from the Tetori Group, Fukui Prefecture, Japan. Memoir of the Fukui Prefectural Dinosaur Museum 1: 1 – 6.

Azuma, Y., and P. J. Currie. 2000. A new carnosaur (Dinosauria: Theropoda) from the Lower Cretaceous of Japan. Canadian Journal of Earth Sciences 37: 1735 – 1753.

Azuma, Y., T. Sugimori, K. Yamada, T. Kojima and K. Takeyama. 1992. Two Dinosaur Footprints from the Tetori Group of Izumi Village, Fukui Prefecture, Central Japan. Bulletin of the Japan Sea Research Institute Kanazawa University 24: 19 – 34.**

Azuma, Y., and K. Takeyama. 1991. Dinosaur Footprints from the Tetori Group, Central Japan — Research of Dinosaurs from the Tetori Group (4) — . Fukui Prefectural Museum, Bulletin 4: 33 – 51.

Azuma, Y., K. Takeyama, N. Kondo, K. Yamaguchi, K. Jochi and S. Hayashi. 1991. Occurrence and Stratigraphical horizons of the Dinosaur Footprints from the Tetori Group, Central Japan — Research of Dinosaurs from the Tetori Group (3) — . Fukui Prefectural Museum, Bulletin 4: 15 – 29.*

Azuma, Y., and Y. Tomida. 1995. Early Cretaceous dinosaur fauna of the Tetori Group in Japan; pp. 125 – 131 *in* A. Sun and Y. Wang (eds.), Sixth Symposium on Mesozoic Terrestrial Ecosystems and Biota, Short Papers. China Ocean Press, Beijing.

Board of Education of Toyama Prefecture. 2003. Report of the Geological Survey of the Tetori Group in Toyama Prefecture. Board of Education of Toyama Prefecture, Toyama.** (in press)

Barrett, P. M., Y. Hasegawa, M. Manabe, S. Isaji and H. Matsuoka. 2002. Sauropod dinosaurs from the Lower

Cretaceous of eastern Asia: taxonomic and biogeographical implications. Palaeontology 45: 1197–1217.

Cook, E., S. Isaji and M. Manabe. 1998. Preliminary results of a taphonomic study of a vertebrate accumulation from the Tetori Group (Lower Cretaceous) of Japan. Paleontological Research 2: 47–52.

Dinosaur Excavation Party of the Fukui Prefectural Museum. 1991. Annual report of the Dinosaur Fossil Excavation in 1990 at Katsuyama City, Fukui Prefecture, Japan — Research of Dinosaurs from the Tetori Group (2) — . Fukui Prefectural Museum, Bulletin 4: 1–11.**

Evans, S. E., and M. Manabe. 1999. Early Cretaceous lizards from the Okurodani formation of Japan. Geobios 32: 889–899.

Evans, S. E., and M. Manabe. 2000. Fossil lizards; pp. 105–106 *in* H. Matsuoka (ed.), Fossils of the Kuwajima "Kaseki-kabe" (Fossil-bluff): Science report on a Neocomian (Early Cretaceous) fossil assemblage from the Kuwajima Formation, Tetori Group, Shiramine, Ishikawa, Japan. Shiramine Village Board of Education, Ishikawa.

Evans, S. E., M. Manabe, E. Cook, R. Hirayama, S. Isaji, C. J. Nicholas, D. Unwin and Y. Yabumoto. 1998. An Early Cretaceous Assemblage from Gifu Prefecture, Japan. New Mexico Museum of Natural History and Science Bulletin 14: 183–186.

Fujita, M. 2002. A new contribution of the stratigraphy of the Tetori Group, adjacent to Lake Kuzuryu, Fukui Prefecture, Central Japan. Memoir of the Fukui Prefectural Dinosaur Museum 1: 41–53.

Fujita, M., T. Miyamoto and H. Tanaka. 1998. *Inoceramus* from the Itoshiro Subgroup of the Tetori Group in the east of Izumi, Fukui Prefecture, and their significance. The Journal of the Geological Society of Japan 104: 52–55.**

Gifu-ken Dinosaur Research Committee. 1993. Report on the dinosaur fossil excavation in Gifu Prefecture, Japan. Gifu Prefectural Museum, Gifu: 46pp.**

Gifu-ken Dinosaur Research Group. 1992. The Tetori Group in Ogamigo area, Shokawa-mura, Gifu Prefecture, Japan. Bulletin of the Gifu Prefectural Museum 13: 9–16. **

Gifu-ken Dinosaur Fossil Excavation Party. 1996. Geology of the Tetori Group in the Kitanomatagawa area, Kamioka-cho, Gifu Prefecture, central Japan. Bulletin of the Gifu Prefectural Museum 17: 1–14.**

Gifu-ken Dinosaur Fossil Excavation Party. 1997. Geology of the Tetori Group in the Yamanomura area, Kamioka-cho, Gifu Prefecture, central Japan. Bulletin of the Gifu Prefectural Museum 18: 1–9.**

Gifu-ken Dinosaur Fossil Excavation Party. 1998. Geology of the Tetori Group in the Otawa area, Kamioka-cho, Gifu Prefecture, central Japan. Bulletin of the Gifu Prefectural Museum 19: 1–6.**

Gifu-ken Dinosaur Fossil Excavation Party. 1999. Dinosaur footprints from the Tetori Group, Kamioka-cho, Gifu Prefectural, central Japan. Bulletin of the Gifu Prefectural Museum 20: 9–12.**

Goto, M. 1993. Dinosaur footprints from Ooyama Town, Toyama Prefecture, Japan. Bulletin of the Toyama Science Museum 16: 1–5.*

Goto, M. 2001. An ammonoid fossil from the Itoshiro Subgroup of the Tetori Group in Ohno city, Fukui Prefecture, central Japan and its significance. Abstracts of the 108th Annual Meeting of the Geological Society of Japan: 131.**

Goto, M., A. Yabe and S. Sano. 2002. The research report of the Dinosaur Fossil Exploratory Excavation held by Fukui Prefecture in 2001. Memoir of the Fukui Prefectural Dinosaur Museum 1: 102–118.*

Gradstein, F. M., F. P. Agterberg, J. G. Ogg, J. Hardenbol, P. Van Veen, J. Thierry and Z. Huang. 1995. A Triassic, Jurassic and Cretaceous time scale; pp.95–126 *in* W. A. Berggren, D. V. Kent, M.-P. Aubry and J. Hardenbol (eds.), Geochronology, Time Scales and Global Stratigraphic Correlation. SEPM Special Publication 54. SEPM (Society for Sedimentary Geology), Tulsa, Oklahoma.

Hasegawa, T., and H. Yoshida. 1999. Depositional age of the Itoshiro and Akaiwa Subgroups of the Tetori Group in the Kamiichi and Tateyama areas, Toyama, Japan based on compound-specific carbon isotope stratigraphy. Abstracts of the 106th Annual Meeting of the Geological Society of Japan: 192.**

Hasegawa, Y., T. Kase and S. Nakajima. 1984. Megavertebrate fossil from the Sanchu Graben. Abstracts of the 91st Annual Meeting of the Geological Society of Japan: 219.**

Hasegawa, Y., M. Manabe, T. Hanai, T. Kase and T. Oji. 1991. A diplodocid dinosaur from the Early Cretaceous Miyako Group of Japan. Bulletin of the National Science Museum, Tokyo, Series C, 17: 1–9.

Hasegawa, Y., M. Manabe, S. Isaji, M. Ohkura, I. Shibata and I. Yamaguchi. 1995. Terminally Resorbed Iguanodontid Teeth from the Neocomian Tetori Group, Ishikawa and Gifu Prefecture, Japan. Bulletin of the National Science Museum, Tokyo, Series C, 21: 35–49.

Hasegawa, Y., M. Manabe, T. Kase, S. Nakajima and Y. Takakuwa. 1999. An Ornithomimid Vertebra from the Early Cretaceous Sebayashi Formation, Sanchu Terrane, Gunma Prefecture, Japan. Bulletin of Gunma Museum of Natural History, 3: 1–6.

Hayami, I. 1960. Jurassic Inoceramids in Japan. Journal of the Faculty of Science, University of Tokyo, Section 2, 12: 277–328.

Hirayama, R. 2000. Fossil turtles; pp. 75–92 *in* H. Matsuoka (ed.), Fossils of the Kuwajima "Kaseki-kabe" (Fossil-bluff): Science report on a Neocomian (Early Cretaceous) fossil assemblage from the Kuwajima Formation, Tetori Group, Shiramine, Ishikawa, Japan. Shiramine Village Board of Education, Ishikawa.*

Hirayama, R. 2002a. Preliminary report of the fossil turtles from the Kitadani Formation (Early Cretaceous) of the Tetori Group of Katsuyama, Fukui Prefecture, Central Japan. Memoir of the Fukui Prefectural Dinosaur Museum 1: 29–40.*

Hirayama, R. 2002b. Fossil reptiles from the Myodani Formation of the Tetori Group (Early Cretaceous) along the Ohmichidani River, Shiramine-mura, Ishikawa Prefecture, Central Japan; pp. 39–41 *in* Hakusan Nature Conservation Center (ed.), Research report of the Mesozoic Tetori Group along the Tedori River, Hakusan Nature Conservation Center, Ishikawa.**

Isaji, S. 1993. *Nippononaia ryosekiana* (Bivalvia, Mollusca) from the Tetori Group in Central Japan. Bulletin of the National Science Museum, Tokyo, Series C, 19: 65–71.

Ishida, K., H. Hashimoto and T. Kozai. 1992. Litho- and bio-stratigraphy of the Lower Cretaceous Hanoura Formation in East Shikoku — Part 1. Hiura and Tsukigatani routes in Katsuura-gawa area —. Journal of Science, University of Tokushima 26: 1–57.*

Kawai, M., and T. Nozawa. 1958. Geological map of Japan and its explanatory text, Higashimozumi Sheet (1:50,000). Geological Survey of Japan. 86pp. *

Kobayashi, T. 1956. Some Jurassic Trigonians from Central and West Japan. Studies on Jurassic Trigonians in Japan. Part V. Japanese Journal of Geology and Geography 27: 1–8.

Kobayashi, T. 1957a. Some Trigonians from the Hida Plateau Region, Central Japan Studies on the Jurassic Trigonians in Japan, Part VII. Japanese Journal of Geology and Geography. 28: 43–46.

Kobayashi, T. 1957b. *Nipponitrigonia* and *Rutitrigonia* in Japan. Transactions and Proceedings of the Palaeontological Society of Japan. New series 26: 51–61.

Kobayashi, T., K. Konishi, T. Sato., I. Hayami and A. Tokuyama. 1957. On the Lower Jurassic Kuruma Group. The Journal of the Geological Society of Japan 63: 182–194.*

Kobayashi, Y. 1998. A new goniopholidid from the Early Cretaceous Kitadani Formation. Fukui Prefecture Japan. Journal of Vertebrate Paleontology 18 (3: supplement): 56A.

Kobayashi, Y., and Y. Azuma. 2003. A new iguanodontian (Dinosauria: Ornithopoda) from the Lower Cretaceous Kitadani Formation of Fukui Prefecture, Japan. Journal of Vertebrate Palaeontology 23: 166–175.

Komatsu, T., K. Chinzei, M. S. Zakhera and H. Matsuoka. 2002. Jurassic soft-bottom oyster *Crassostrea* from Japan. Palaeontology 45: 1037–1048.

Kozai, T., K. Ishida, S. O. Park and K. H. Chang. 2002. Early Cretaceous non-marine bivalves from Korea and Japan. Abstracts of the 2002 Annual Meeting of the Palaeontological Society of Japan: 16–17.

Kumon, F., and K. Kano. 1991. Tetori Group in the Shokawa District, Gifu Prefecture, central Japan. Report of Research Project, Grant-in-Aid for Scientific Research (C) no. 01540626: 2–37.**

Kumon, F., and T. Umezawa. 2001. The sedimentary facies of the Tetori Group along the Matsuyamadani, Shokawa, Gifu Prefecture, central Japan. Earth Science (Chikyu Kagaku) 55: 321–328.*

Kunimitsu, M., K. Shikano, M. Sugiyama and Y. Hasegawa. 1990. Dinosaur footprints discovered from the Tetori Group in Shirakawa Village, Gifu Prefecture. Abstracts of the 1990 Annual Meeting of the Palaeontological Society of Japan: 101.**

Kusuhashi, N., H. Matsuoka, H., Kimiya and T. Setoguchi. 2002. Stratigraphy of the late Mesozoic Tetori Group in the Hakusan Region, central Japan: an overview. Memoirs of the Faculty of Science, Kyoto University, series of geology and mineralogy, 59: 9–31.

Maeda, S. 1952a. A Stratigraphical Stud y on the Tetori Series of the Upper Kuzuryu District, in Fukui Prefecture. The Journal of the Geological Society of Japan 58: 401–410.*

Maeda, S. 1952b. A Stratigraphical Study on the Tetori Series in the Upper Shiokawa District in Gifu Prefecture. The Journal of the Geological Society of Japan 58: 145–153.*

Maeda, S. 1957a. Stratigraphy and Geological Structure of the Tetori Group along the Uchinami and Itoshiro Rivers, Fukui Prefecture. The Journal of the Geological Society of Japan 63: 357–365.*

Maeda, S. 1957b. The Tetori Group in the Oyama Area, Itoshiro Village, Fukui Prefecture. The Journal of the Geological Society of Japan 63: 664–668.*

Maeda, S. 1957c. Stratigraphy and geological structure of the Tetori Group in the Kami-hambara district, along the Kuzuryu River, Fukui Prefecture. Journal of the College of Arts and Science, Chiba University 2: 143–147.*

Maeda, S. 1958a. Stratigraphy and Geological Structure of the Tetori Group in the Hakusan District (Part 1. Stratigraphy). The Journal of the Geological Society of Japan 64: 583–594.*

Maeda, S. 1958b. Stratigraphy and Geological Structure of the Tetori Group in the Hida Mountainland. The Journal of the Geological Society of Japan 64: 388–398.*

Maeda, S. 1958c. On the Tetori Group in Toyama Prefecture. Jubilee publication in the commemoration of Professor H. Fujimoto sixtieth birthday. 124–134.*

Maeda, S. 1959. On two species of *Polymesoda* from the Tetori Group in the Hida Mountainland, central Japan. Transactions and Proceedings of the Palaeontological Society of Japan. New series 36: 157–160.

Maeda, S. 1961a. On the Geological History of the Mesozoic Tetori Group in Japan. Journal of the College of Arts and Science, Chiba University 3: 369–426.*

Maeda, S. 1961b. The Tetori Group along the Asuwa River in Fukui Prefecture. Journal of geography 70: 65–69.*

Maeda, S. 1962a. Some Lower Cretaceous Pelecypods from the Akaiwa Subgroup, the Upper division of the Tetori Group in central Japan. Transactions and Proceedings of the

Palaeontological Society of Japan. New Series, 48: 343–351.

Maeda, S. 1962b. Trigoniid from the Tetori Group in the Furukawa district Central Japan. Transactions and Proceedings of the Palaeontological Society of Japan. New series, 47: 273–276.

Maeda, S. 1962c. On Some *Nipponitrigonia* in Japan. Jour. Journal of the College of Arts and Science, Chiba University 3: 503–514.

Maeda, S. 1963a. Some Jurassic Trigonids from the Tetori Group in the Kuzuryu district, central Japan. Transactions and Proceedings of the Palaeontological Society of Japan. New series, 49: 1–7.

Maeda, S. 1963b. Trigonioides from the late Mesozoic Tetori Group, Central Japan. The Journal of the Geological Society of Japan 51: 79–85.

Maeda, S. 1966. Some *Myophorella* from the Tetori Group in the Arimine District, Central Japan. Annual Report of the Foreign Student's College of Chiba University 1: 43–50.

Maeda, S., and Y. Hori. 1950. New localities of Jurassic Ammonites in Fukui Prefecture. Mineralogy and geology 3: 253–254.**

Maeda, S., and K. Takenami 1957. Stratigraphy and Geological Structure of the Tetori Group on the Southern District of Toyama Prefecture. Journal of the College of Arts and Science, Chiba University 63: 273–288.*

Manabe, M. 1999. The early evolution of the Tyrannosauridae in Asia. Journal of Paleontology 73: 1176–1178.

Manabe, M. and P. M. Barrett, 2000. Dinosaurs; pp. 93–98 *in* H. Matsuoka (ed.), Fossils of the Kuwajima "Kaseki-kabe" (Fossil-bluff): Science report on a Neocomian (Early Cretaceous) fossil assemblage from the Kuwajima Formation, Tetori Group, Shiramine, Ishikawa, Japan, Shiramine Village Board of Education, Ishikawa.*

Manabe, M., P. M. Barrett and S. Isaji. 2000a. A refugium for relicts? Nature 404: 953.

Manabe, M., G. W. Rougier, S. Isaji and H. Matsuoka. 2000b. Fossil mammals; pp. 107–108 *in* H. Matsuoka (ed.), Fossils of the Kuwajima "Kaseki-kabe" (Fossil-bluff): Science report on a Neocomian (Early Cretaceous) fossil assemblage from the Kuwajima Formation, Tetori Group, Shiramine, Ishikawa, Japan, Shiramine Village Board of Education, Ishikawa.*

Masuda, F., M. Ito, M. Matsukawa, M. Yokokawa and Y. Makino. 1991. Depositional environments; pp. 11–17 *in* M. Matsukawa (ed.), Lower Cretaceous nonmarine and marine deposits in Tetori and Sanchu, Honshu, IGCP-245 field trip Guide of 1991 Fukuoka International Symposium.

Matsukawa, M. 1983. Stratigraphy and sedimentary environments of the Sanchu Cretaceous, Japan. Memoirs of the Ehime University. Natural science. Series 4: 1–50.

Matsukawa, M., O. Takahashi, K. Hayashi, M. Ito and V. P. Konovaloy. 1997a. Early Cretaceous Paleontology of Japan, based on the tectonic and faunal data. The Memories of the Geological Society of Japan 48: 29–42.

Matsukawa, M., T. Hamuro, S. Fujii and K. Koarai. 2002. Dinosaur tracks from the eastern part of the Tetori Group in Toyama Prefecture, central Japan. Bulletin of Tokyo Gakugei University, Section IV, 54: 171–177.

Matsukawa, M., T. Hamuro, T. Mizukami and S. Fujii. 1997b. First trackway evidence of gregarious dinosaurs from the Lower Cretaceous Tetori Group of eastern Toyama prefecture, central Japan. Cretaceous Research 18: 603–619.

Matsukawa, M., M. Ito, K. Hayashi, O. Takahashi, S. Y. Yang and S. K. Lim. 1998. Evaluation of nonmarine bivalves as chronological indicates, based on examples from the Lower Cretaceous of east Asia. New Mexico Museum of Natural History and Science Bulletin 14: 125–133.

Matsukawa, M., and K. Nakada. 1999. Stratigraphy and sedimentary environment of the Tetori Group in its central distribution based on nonmarine molluscan assemblages. The Journal of the Geological Society of Japan 105: 817–835.*

Matsukawa, M., and I. Obata. 1992. Correlation of non-marine and marine formations in the Lower Cretaceous of Japan: A contribution to non-marine formations in Asia; pp. 78–93 *in* N. Mateer and P. J. Chen (eds.), Aspects of non-marine Cretaceous Geology. China Ocean Press, Beijing.

Matsumoto, T., I. Obata, M. Tashiro, Y. Ohta, M. Tamura, M. Matsukawa and H. Tanaka. 1982. Correlation of marine and non-marine formations in the Cretaceous of Japan. Fossils 31: 1–26**.

Matsuoka, H. 2000. Tritylodontids (Synapsida, Therapsida); pp. 53–74 *in* H. Matsuoka (ed.), Fossils of the Kuwajima "Kaseki-kabe" (Fossil-bluff): Science report on a Neocomian (Early Cretaceous) fossil assemblage from the Kuwajima Formation, Tetori Group, Shiramine, Ishikawa, Japan, Shiramine Village Board of Education, Ishikawa.*

Matsuoka, H., Y. Hasegawa, A. Koizumi, A. Nakamura and I. Yamaguchi. 2001a. Trail of horseshoe crab, *Kouphichnium* isp., from the Kuwajima Formation (Tetori Group) in Okuchi Village, Ishikawa Prefecture. Abstracts of the 150th Regular Meeting of the Palaeontological Society of Japan: 60.**

Matsuoka, H., S. Isaji, Y. Hasegawa, I. Yamaguchi and T. Takada. 2001b. A new dinosaur track locality in the Tetori Group of Mekko-dani ravine, Okuchi, Ishikawa, Japan. Bulletin of Gunma Museum of Natural History, 5: 39–48.*

Matsuoka, H., N. Kusuhashi, T. Takada and T. Setoguchi. 2002. A clue to the Neocomian vertebrate fauna: initial results from the Kuwajima "Kaseki-kabe" (Tetori Group) in Shiramine, Ishikawa, central Japan. Memoirs of the Faculty of Science, Kyoto University, series of geology and mineralogy 59: 33–45.

Morozumi, Y., T. Kamei, M. Tashiro, N. Kikuchi, K. Ishida, Y. Azuma, H. Hashimoto and K. Nakao. 1995. A dinosaur tooth from the Lower Cretaceous Tatsukawa Formation in Tokushima Prefecture, Japan. Bulletin of the Tokushima Prefectural Museum 5: 1–9.*

Sato, T., I. Hayami and K. Wakita. 1963. The Jurassic; pp. 79–

98 *in* F. Takai, T. Matsumoto and R. Toriyama (eds.), Geology of Japan. The University of Tokyo Press, Tokyo.

Sato, T., and Y. Kanie 1963. *Lilloetia* sp. (Ammonite Callovienne) de Mitarasi au Bassin de Tetori. Transactions and Proceedings of the Palaeontological Society of Japan. New series, 49: 8.

Shibata, K., and S. Uchiumi .1995. K–Ar age results–5 — New data from the Geological Survey of Japan — . Bulletin of the Geological Survey of Japan 46: 643–650.*

Shigeno, J. in press. Sedimentary environments of the Jurassic-Cretaceous Tetori Group of Nagato River area, southern Toyama Prefecture. Journal of science of the Hiroshima University. Ser. C.

Shikama, T. 1969. On a Jurassic Reptile from Miyama-cho, Fukui Prefecture, Japan. Science reports of the Yokohama National University. Section 2, 15: 25–34.

Shikano, K., M. Kunimitsu and M. Sugiyama. 2001.Dinosaur footprints from the Lower Cretaceous Tetori Group in Shokawa Village, Gifu Prefecture, central Japan. Earth Science (Chikyu Kagaku) 55: 329–338.*

Tamura, M. 1990. Stratigraphic and palaeontologic studies on non-marine Cretaceous bivalve faunas in Southwest Japan. Memoirs of the Faculty of Education, Kumamoto University. Natural science 39: 1–47.*

Tanase, A., N. Yamada and K. Wakita. 1994. Hayashidani Andesite — 100Ma calc-alkaline andesite in the uppermost reaches of Kuzuryu River, central Japan. The Journal of the Geological Society of Japan 100: 635–638.**

Tashiro, M. 1988. Paleobiogeigraphy and paleoecology of the Cretaceous System of Southwest Japan — focusing Lower Cretaceous of the Chichibu Terrain — . Report of Research Project, Grant-in-Aid for Scientific Research (C) no. 61540574: 3–19.**

Tashiro, M. 1994. On some selected bivalve fossils from various localities of Cretaceous strata in Japan. Memories of Faculty of Science, Kochi University, Series E, Geology, 15: 7–19.

Tashiro, M., and K. Okuhira. 1993. Occurrence of *Trigonioides* from the Lower Cretaceous of Shikoku, and its significance. Geological reports of Shimane University 12: 1–9.*

Tomioka, N., A. Ishiwatari, A. Tanase, S. Shimizu and H. Kagami. 2000. Geology and petrology of the Early Miocene Arashimadake cauldron in Ono City, Fukui Prefecture, central Japan. The Journal of the Geological Society of Japan 106: 313–329.*

Toyama Dinosaur Research Group. 2002. Report of the Dinosaur Excavation Project in 2000 & 2001, Toyama Prefecture, Japan. Toyama Dinosaur Research Group, Toyama, 60pp.*

Tsukano, Z. 1969. Explanatory Text of the Geological Map of Fukui Prefecture, Fukui, 117pp.**

Unwin, D. M., M. Manabe, K. Shimizu and Y. Hasegawa. 1996. First record of Pterosaurs from the Early Cretaceous Tetori Group: a Wing-phalange from the Amagodani Formation in Shokawa, Gifu Prefecture, Japan. Bulletin of the National Science Museum, Tokyo, Series C, 22: 37–46.

Unwin, D. M., and H. Matsuoka. 2000. Pterosaurs and birds; pp. 99–104 *in* H. Matsuoka (ed.), Fossils of the Kuwajima "Kaseki-kabe" (Fossil-bluff): Science report on a Neocomian (Early Cretaceous) fossil assemblage from the Kuwajima Formation, Tetori Group, Shiramine, Ishikawa, Japan, Shiramine Village Board of Education, Ishikawa.**

Yabumoto, Y. 2000. Fossil fishes; pp. 46–49 *in* H. Matsuoka (ed.), Fossils of the Kuwajima "Kaseki-kabe" (Fossil-bluff): Science report on a Neocomian (Early Cretaceous) fossil assemblage from the Kuwajima Formation, Tetori Group, Shiramine, Ishikawa, Japan, Shiramine Village Board of Education, Ishikawa.**

Yabumoto, Y. 2002. Early Cretaceous freshwater fishes from the Myodani Formation of the Tetori Group along Omichidani River in Shiramine Village, Ishikawa, Japan. pp. 43–44 *in* Hakusan Nature Conservation Center (ed.), Research report of the Mesozoic Tetori Group along the Tedori River, Hakusan Nature Conservation Center, Ishikawa.**

Yamada, K. 1988. Tetori Group; pp. 26–37 *in* Yamashita, N., Y. Kaseno and J. Itoigawa (eds.), Regional Geology of Japan Part 5 Chubu II, Kyoritsu Shuppan Co., Tokyo.**

Yamada, K., S. Niwa and M. Kamata. 1989. Lithostratigraphy of the Mesozoic Tetori Group in the upper reaches of the Kuzuryu River, central Japan. The Journal of the Geological Society of Japan 95: 391–403.*

Yamada, N., F. Takizawa, A. Tanase and K. Kawada. 2001. K–Ar ages of the Oyashirazu Formation: An evidence of about 100Ma andesitic volcanism in the border area of Toyama and Niigata prefectures, central Japan. Earth Science 55: 113–118.**

Yasuno, T. 1994. Occurrence of a scale from the Middle Jurassic Tetori Group of Fukui Prefecture, central Japan. Bulletin of the Fukui City Museum of Natural History 41: 1–4.*

* : in Japanese with English abstract

** : in Japanese

＜ 地 名 ＞

Akahoke …………赤歩危
Arimine …………有峰
Asuwa …………足羽
Furukawa …………古川
Goribashiri …………ゴリバシリ
Inotani …………猪谷
Itsuki …………伊月
Jinzu River …………神通川
Kaizara …………貝皿
Katsuyama …………勝山
Kuwajima …………桑島
Minamimatadani …………南俣谷
Myodani …………明谷
Naktong …………洛東
Obuchi …………大淵
Oshira River …………大白川
Sebayashi …………瀬林
Taie …………太江
Taniyamadani …………谷山谷
Tochimochiyama …………栃餅山
Ushimaru …………牛丸
Yugami …………湯上
Akaiwa …………赤岩
Asahi …………朝日
Bessandani …………別山谷
Futamatadani …………二又谷
Hakusan …………白山
Ioridanitoge …………庵谷峠
Izumi …………和泉
Joganji River …………常願寺川
Kamihambara …………上半原
Kiritani …………桐谷
Kuzuryu …………九頭竜
Mitarai …………御手洗
Nagaoyama …………長尾山
Nochino …………後野
Oidani …………大井谷
Ryoseki …………領石
Shokawa …………荘川
Takinami River …………滝波川
Tatsukawa …………立川
Tochio …………栃尾
Yambara …………山原
Wasabu …………和佐府
Amagodani …………アマゴ谷
Ashidani …………葦谷
Chinaboradani …………智那洞谷
Gomishima …………五味島
Hidagoe …………飛騨越
Itoshiro …………石徹白
Jigokudani …………地獄谷
Kagidani …………カギ谷
Kamioka …………神岡
Kitadani …………北谷
Mana River …………真名川
Monobegawa …………物部川
Nakanomatanokkoshi …………中俣乗越
Numamachi …………沼町
Okura …………大倉
Sakawa …………佐川
Sugisaki …………杉崎
Tanemura …………種村
Tedori River …………手取川
Uchinami River …………打波川
Yambarazaka …………山原坂
Wakino …………脇野