

Records of *Banjos banjos banjos* (Perciformes: Banjosidae) from Amami-oshima island, Amami Islands, Kagoshima Prefecture, Japan

Kunto Wibowo^{1,2}, Siti Zaidatul Afifah M. Zaidon³ and Hiroyuki Motomura²

¹The United Graduate School of Agricultural Sciences, Kagoshima University,
1–21–24 Korimoto, Kagoshima 890–0065, Japan

²Research Center for Oceanography, LIPI, Jl. Pasir Putih I, Ancol Timur, Jakarta 14430, Indonesia

³Faculty of Fishery and Food Sciences, Universiti Malaysia Terengganu,
Kuala Terengganu, Terengganu 31030, Malaysia

³The Kagoshima University Museum, 1–21–30 Korimoto, Kagoshima 890–0065, Japan

■ Introduction

The banjosfish genus *Banjos* (Perciformes: Banjosidae), characterized by dorsal fin usually with 10 spines and 12 soft rays, membrane of spinous portion strongly incised, long and flat anterior spines and the longest spine subequal to head length; anal fin usually with strong 3 spines and 7 soft rays; small conical teeth on both jaws and vomer, no teeth on palatines; preopercle, interopercle and subopercle finely serrated; posterior parts of cleithrum, supracleithrum and posttemporal exposed with finely serrated margin; branchiostegal rays 6; and vertebrae 25, comprises three valid species [*viz.*, *Banjos banjos* (Richardson, 1846), *Banjos aculeatus* Matsunuma and Motomura, 2017 and *Banjos peregrinus* Matsunuma and Motomura, 2017], distributed in the western Pacific Ocean from Japan to Australia and the southeastern Indian Ocean at relatively deep habitat (Matsunuma and Motomura, 2017). Furthermore, *Banjos banjos* can be separated into two valid subspecies, the northwestern Pacific Ocean subspecies *B. banjos banjos* (Richardson, 1846) and the southeastern Indian Ocean subspecies *B. banjos brevispinis* Matsunuma and Motomura, 2017 (Matsunuma and Motomura, 2017).

Four specimens of the genus *Banjos*, collected from Amami-oshima island, were subsequently identified as *B. banjos* (subspecies *B. banjos banjos*). This is the only species of the genus *Banjos* currently represented

in Japanese water, recorded from Kanagawa to Okinawa prefectures (see the detailed distribution in Matsunuma and Motomura, 2017). In Kagoshima Prefecture, *B. banjos* has previously been reported from southwestern coast of Kyushu to Kuchino-shima island (Matsunuma and Motomura, 2017) and Amami-oshima island (Suzuki, 1964; Suzuki et al., 1964; Fujiyama, 2004). However, the previous reports of this species from Amami-oshima island presented photographs only, no specimens were deposited in any fish collections in museums. In addition, ichthyofaunal surveys had recently been conducted in Amami-oshima island by Nakae et al. (2018), but specimens of Banjosidae had never been collected during this survey. Therefore, the specimens of *B. banjos banjos* examined in this study represent the first specimen-based record of the species from Amami-oshima island.

■ Materials and Methods

Counts and measurements followed Matsunuma and Motomura (2017). Standard length is abbreviated as SL. Curatorial procedures followed Motomura and Ishikawa (2013). All specimens examined in this study, collected by T. Maekawa from off Amami-oshima island, Kagoshima Prefecture, were deposited in the Kagoshima University Museum (KAUM), Kagoshima, Japan, included: KAUM–I. 131224, 272.7 mm SL, 25 June 2019; KAUM–I. 132096, 298.8 mm SL, 11 July 2019; KAUM–I. 132097, 280.7 mm SL, 18 July 2019; KAUM–I. 132722, 244.6 mm SL, 28°28'N, 129°28'E, 19 August 2019.

■ Results and Discussion

Counts and proportional measurements, as percentages of SL, of the specimens (244.6–298.8 mm SL)

Nature of Kagoshima 46: 125–128.

✉ KW: e-mail: kunto_we@yahoo.co.id

Published online: 9 October 2019

http://journal.kagoshima-nature.org/archives/NK_046/046-024.pdf



Fig. 1. Fresh specimen of *Banjos banjos banjos* (KAUM-I. 131224, 272.7 mm SL) collected from off Amami-oshima island, Kagoshima Prefecture.

were as follows: X, 12 dorsal-fin rays; III, 7 anal-fin rays; 14–15 left and right pectoral-fin rays; pored lateral line scales 46–47; scale rows in longitudinal series 63–65; scale rows above/below lateral line 14–15/30–32; scale rows between 4th dorsal-fin spine and lateral line 11–12; scale rows between last dorsal-fin spine and lateral line 10–11; gill rakers 5 + 15–16 = 20–21; body depth at pelvic-fin origin 42.5–44.4; body depth at anal-fin origin 39.4–41.0; body width 16.2–17.1; head length 34.2–36.3; snout length 13.8–15.1; orbit diameter 11.5–13.0; vertical orbit diameter 9.7–11.4; least interorbital width 7.1–7.4; interorbital width at mid-orbit 7.7–7.9; inter-posterior-nostril distance 5.8–6.0; width of interorbital scaled area 2.7–4.2; upper jaw length 12.5–13.7; suborbital depth 9.7–11.2; postorbital length 12.6–15.6; predorsal-fin length 42.2–43.9; preanal-fin length 76.5–77.9; prepelvic-fin length 40.0–42.2; 1st dorsal-fin spine length 4.8–5.7; 2nd dorsal-fin spine length 11.5–14.8; 3rd dorsal-fin spine length 33.5–37.0; 4th dorsal-fin spine length 28.9–31.9; 5th dorsal-fin spine length 20.3–25.5; 6th dorsal-fin spine length 19.7–22.3; 7th dorsal-fin spine length 15.9–16.5; 8th dorsal-fin spine length 11.5–16.2; 9th dorsal-

fin spine length 8.4–12.2; 10th dorsal-fin spine length 7.2–8.7; 1st dorsal-fin soft ray length 20.1–21.1; 2nd dorsal-fin soft ray length 19.3–20.2; 5th dorsal-fin soft ray length 14.6–16.1; 1st anal-fin spine length 5.4–7.2; 2nd anal-fin spine length 19.7–22.0; 3rd anal-fin spine length 10.9–12.8; 1st anal-fin soft ray length 13.6–14.7; 3rd anal-fin soft ray length 11.0–11.7; longest pectoral-fin length 33.8–36.2; pelvic-fin spine length 19.8–21.1; longest pelvic-fin soft ray length 26.5–27.5; caudal fin length 17.5–18.3; caudal peduncle length 15.6–16.9; upper caudal peduncle length 16.1–16.2; caudal peduncle depth 11.0–11.4.

The four specimens (244.6–298.8 mm SL) from the Amami-oshima island agreed well with the diagnostic characters of *B. banjos* (Richardson, 1846) given by Matsunuma and Motomura (2017) e.g., serrae on ventral margin of lacrimal 0; head length 34.2–36.3 % of SL; orbit diameter 11.5–13.0 % of SL; vertical orbit diameter 9.7–11.4 % of SL; least interorbital width 7.1–7.4 % of SL; postorbital length 12.6–15.6 % of SL; prepelvic-fin length 40.0–42.2 % of SL; first dorsal-fin spine length 4.8–5.7 % of SL; and second dorsal-fin spine length 11.5–14.8 % of SL.

Further examination of the specimens showed them to be recognized as subspecies of *B. banjos banjos* (Richardson, 1846), agreed closely with the diagnosis characters of *B. banjos banjos* by Matsunuma and Motomura (2017), e.g., least interorbital width 7.1–7.4 % of SL; first dorsal-fin spine length 4.8–5.7 % of SL; second dorsal-fin spine length 11.5–14.8 % of SL; and eighth dorsal-fin spine length 11.5–16.2 % of SL. In addition to the diagnosis characters, all other meristics and morphometrics of the specimens examined in this study were also within the ranges of those of *B. banjos banjos* given by Matsunuma and Motomura (2017).

Banjos banjos banjos is very similar to another subspecies *B. banjos brevispinis*, the former can be distinguished from the latter by having a relatively broader least interorbital width and slightly longer lengths of the first, second and eight dorsal-fin spines (Matsunuma and Motomura 2017). In addition, subspecies of *B. banjos banjos* and *B. banjos brevispinis* are also separated geographically, the former having been reported from northwestern Pacific from the South China Sea north to Japan and the latter from the southeastern Indian Ocean, including Lombok, Indonesia and Western Australia (Matsunuma and Motomura, 2017). In Japanese waters, *B. banjos banjos* has widely distribution from Kanagawa to Okinawa prefectures (Matsunuma and Motomura, 2017). Although many surveys of marine fishes have been conducted in Amami-oshima island (see Nakae et al., 2018: table 1), only three authors (e.g., Suzuki, 1964; Suzuki et al., 1964; Fujiyama, 2004) reported *B. banjos banjos* from this island which were only on the basis of photographs (photographed individuals not retained). In addition, no specimen of *B. banjos banjos* was collected during the most recent comprehensive ichthyofaunal survey in Amami-oshima waters conducted by Nakae et al. (2018: reported 1615 species in 618 genera, 175 families and 35 orders). Accordingly, the specimens of *B. banjos banjos* examined in this study represent the first specimen-based record of the species from Amami-oshima island.

■ Acknowledgements

We are especially grateful to T. Maekawa (Amami-oshima island) for collecting and donating the specimens and volunteers and students of KAUM for their curatorial assistance. This study was supported in part by JSPS KAKENHI Grant (JP19770067, JP26241027, JP24370041, JP23580259, JP26450265); the JSPS Core-to-Core Program: B Asia-Africa Science Platforms; the “Biological Properties of Biodiversity

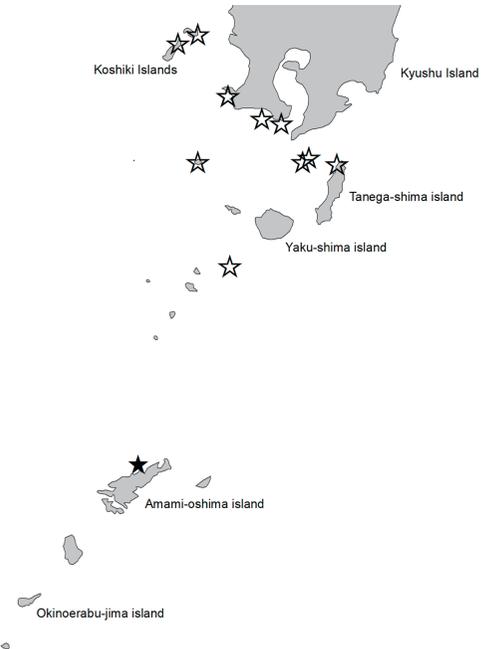


Fig. 2. Distribution of *Banjos banjos banjos* in Kagoshima Prefecture based on previous reports by Matsunuma and Motomura (2017) (open stars) and collected specimens examined in this study (closed star).

Hotspots in Japan” project of the National Museum of Nature and Science, Tsukuba, Japan; “Establishment of Research and Education Network on Biodiversity and Its Conservation in the Satsunan Islands” project of Kagoshima University adopted by the Ministry of Education, Culture, Sports, Science and Technology, Japan; and the “Island Research” project of Kagoshima University.

■ References

- Fujiyama, M. 2004. Privately printed book: Fishes collected with hook and line from Amami-oshima Island [Shihon amami no chogyo]. Self-publishing (Manta Fujiyama), Naze, 180 pp. (In Japanese)
- Matsunuma, M. and Motomura, H. 2017. Review of the genus *Banjos* (Perciformes: Banjosidae) with descriptions of two new species and a new subspecies. *Ichthyological Research*, doi: 10.1007/s10228-016-0569-9.
- Motomura, H. and S. Ishikawa (eds.). 2013. Fish collection building and procedures manual. English edition. The Kagoshima University Museum, Kagoshima and the Research Institute for Humanity and Nature, Kyoto. 70 pp.
- Nakae, M., Motomura, H., Hagiwara, K., Senou, H., Koeda, K., Yoshida, T., Tashiro, S., Jeong, B., Hata, H., Fukui, Y., Fujiwara, K., Yamakawa, T., Aizawa, M., Shinohara, G. and Matsuura, K. 2018. An annotated checklist of fishes of Amami-oshima Island, the Ryukyu Islands, Japan. *Memoirs of the National Museum of Nature and Science*, 52: 205–361.

- Richardson, J. 1846. Report on the ichthyology of the seas of China and Japan. Report of the British Association for the Advancement of Science, 15th Meeting, pp. 187–320.
- Suzuki, K. 1964. Results of Amami-Expedition. 2. Fishes. Reports of Faculty of Fisheries, Prefectural University of Mie, 5: 153–188.
- Suzuki, K., Kataoka, T. and Higashikawa, S. 1964. Fishes of Amami-oshima Island: a report by fish team [Amami-oshima no sakana, Gyoruihan chosa hokokusho]. In: The research team for marine life of Amami-oshima Island [Amami-oshima kaiyoseibutsu chosadan] (ed.), Reports on marine life survey on Amami-oshima Island [Amami-oshima kaiyoseibutsu chosa hokokusho]. Laboratory of Toba Aquarium, Toba and the Asahi Shimbun Company, Nagoya, pp: 17–42. (In Japanese)