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Ceratobregma helenae (Perciformes: Tripterygiidae) from Kume-jima Island, Okinawa Islands, Japan: northernmost record of the species and distribution in Japanese waters

Yuna Dewa, Shunji Terai and Hiroyuki Motomura*

Abstract The triplefin genus *Ceratobregma* Holleman, 1987 includes two valid species, the Spotted Spiny-eye Triplefin *C. acanthops* (Whitley, 1964) and Helen's Triplefin *C. helenae* Holleman, 1987. Both are characterized by the first dorsal fin having 3 spines, the anal fin 2 spines, and the pelvic fin with one spine and 2 rays, in addition to discontinuous lateral lines (upper series of tubular pored scales and lower series of notched scales), well developed lateral ethmoids, 3 or 4 spines on the anterior margin of the orbit in males, and a scaleless opercle and pectoral-fin base. *Ceratobregma acanthops* is known only from the Coral Sea, whereas *C. helenae* is widely distributed in the eastern Indian and western Pacific oceans. A single specimen (KAUM–I. 146836, 24.3 mm standard length) of *C. helenae* collected from Kume-jima Island, Okinawa Islands, Ryukyu Archipelago, Japan in October 2020 possessed the following characters: first spine of 1st dorsal-fin shorter than that of 2nd dorsal-fin; caudal peduncle narrow; sides of body with orange vertical bands; and 2nd dorsal fin with a basal series of orange spots. Previous records of the species from Japan include a single specimen (BPBM 8723, 29.6 mm standard length) collected from Taketomi-jima Island, Yaeyama Islands in 1968, and underwater photographs (as *Ceratobregma* sp.) taken at Irabu-jima and Miyako-jima Islands, Miyako Islands, in 2002 and 2004, respectively. The two Japanese specimens were examined, that from Kume-jima Island (described in detail) representing the northenmost record for the species. The new standard Japanese name "Mikan-hebigimpo" is proposed for *C. helenae* on the basis of the Kume-jima specimen, "Mikan-hebigimpo-zoku" serving for the genus *Ceratobregma*.

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Genetic structure of the Japanese torrent catfish _Liobagrus reinii_ (Amblycipitidae) in the Miya River and neighboring drainages, Mie Prefecture, Japan

Ayumu Ikoma, Tatsuya Toda, Tesshin Nagasaki and Kouichi Kawamura*

Abstract Genetic characteristics of the Japanese torrent catfish *Liobagrus reinii* in the Miya River and neighboring drainages were investigated, using mtDNA and eight microsatellite (MS) markers, to evaluate the effects of man-made river structures on the distribution and genetic structure of the species. A total of 23 mtDNA haplotypes were detected, forming a star-like haplotype network, in which the population in the upper reaches (URM) formed a unique group. Many populations in tributaries of the middlelower reaches

(MLRM) included unique haplotypes, although they shared a common haplotype located at the center of the network. MS markers indicated that genetic diversity tended to decrease upstream in the tributaries, coupled with a decline in effective population size and the existence of genetic bottlenecks. These phenomena were especially evident in tributaries isolated with weirs or dams. The fixation index R_{ST}, the values of which were smaller than F_{ST}, indicated isolation by distance (Mantel test), genetic differentiation among populations having occurred in recent years. Although a Bayesian-based assignment test showed unique clusters in the populations of isolated tributaries, including the URM population, many MLRM populations shared an admixture of multiple clusters, probably resulting from the dispersal of *L. reinii*. These results indicated that *L. reinii* in the Miya River included two conservation units, in the upper and middle-lower reaches, respectively. Man-made river structures seem to have caused fragmentation of the distribution of the species, resulting in small tributary populations suffering from genetic deterioration. In drainages neighboring the Miya River, the Isezi River population of *L. reinii* seems to be indigenous, owing to unique genetic characteristics in mtDNA and MS, whereas the sharing of genetic characteristics with the URM population of the Miya River indicated that the Akaba River population is likely to have been introduced from the Miyagawa Reservoir.

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First northern hemisphere record of *Cirrhitichthys guichenoti* (Perciformes: Cirrhitidae) from Izu-oshima Island, Izu Islands, Japan with notes on the inhabitation in Japan

Hidetoshi Wada*, Hiroshi Senou and Osamu Hoshino

Abstract During an ichthyofaunal survey of Sagami Bay (Japan) and surrounding waters, a single hawkfish specimen (55.7 mm standard length: SL) was collected from Izu-oshima Island, Izu Islands by handnet at a depth of 35 m on 7 December 2011. The specimen was subsequently identified as *Cirrhitichthys guichenoti* (Sauvage, 1880), having the following combination of characters: dorsal-fin rays X, 13; anal-fin rays III, 7; pectoral-fin rays 16, uppermost and lower six rays unbranched; lateral-line scales 52; horizontal scale rows between base of middle dorsal-fin spinous portion and lateral line 4; gill rakers 5 + 12; greatest body depth 31.1% of SL; snout length 35.6% of head length; enlarged canine teeth on front of upper jaw and central part of lower jaw; and lateral surface of body white with large brownish-red blotches when fresh. This species has been previously recorded from Indonesia, Mauritius, Réunion, Madagascar, Comoros and South Africa, the present specimen from Izu-oshima Island representing the first specimen-based record from the northern hemisphere and northernmost record for the species. Seventeen underwater observations (photographic and visual) from 8 November 2011 to 25 May 2021 of juvenile and adult (ca. 35–100 mm in total length) *C. guichenoti*, documented from Izu Peninsula, Izu-oshima Island, and Chichi-jima Islands, Ogasawara Islands, and encompassing both the coldest and hottest

seasons, suggest that the population is established and reproducing in Japanese waters. The new standard Japanese name “Kiringombe” is proposed for the species, based on the present specimen.

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First record of *Cyttopsis cypho* (Zeiformes: Parazenidae) from Japan and morphological comparisons with *Cyttopsis rosea*

Kaito Mizumachi*, Tohru Nakayama, Akinori Teramura and Hiromitsu Endo

Abstract The parazenid genus *Cyttopsis* Gill, 1862 includes two valid species, *C. rosea* (Lowe, 1843), known from the Atlantic and Indo-west Pacific Oceans, and *C. cypho* (Fowler, 1934) restricted to the eastern Indian and western Pacific Oceans. Around Japan, the former species is common, whereas the latter has not been recorded to date. However, two *Cyttopsis* specimens [51.6 and 71.8 mm standard length (SL)] collected from Tosa Bay and Enshu-nada, Japan in 2008 and 2019, respectively, have been identified as *C. cypho*. In addition to previous means of distinguishing between the two species, a faint dark lateral spot posteriorly on the body (absent in *C. rosea*) and fewer lateral-line scales (55–64) in *C. cypho* (vs 73–82), the following additional diagnostic characters were found: interspace between spines on 4th and 5th abdominal scutes very narrow (*C. cypho*) vs. wide (*C. rosea*); orbit diameter 13.6–16.6% vs. 14.7–19.1% of SL; interorbital width 5.8–6.6% vs. 5.8–8.0% of SL; snout length 21.1–27.4% vs. 17.8–23.3% of SL; and mandible length 22.6–25.6% vs. 22.1–26.9% of SL. The two specimens, representing the first Japanese records of *C. cypho* (for which the new standard Japanese name “Ittenkagomatodai” is proposed), extend the northern range of the species from off northern Mindanao Island, Philippines (type locality).

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First record of the epigonid fish *Epigonus elongatus* off the coast of Okinawa Island, Japan

Makoto Okamoto* and Kei Miyamoto

Abstract In an on-going faunal study of deep regions of the East China Sea, using a Remotely-Operated Vehicle (ROV), a single specimen (57.4 mm in standard length: SL) of *Epigonus elongatus* Parin and Abramov, 1986 was collected at 410 m depth off the west coast of Okinawa Island, Japan. The species has been previously reported only from the type locality in the Farquhar Islands, Western Indian Ocean, the present report being the first of the

species from waters adjacent to Japan. The new standard Japanese name “Kogeme-yasemutsu” is proposed for the species, which belongs to the *E. pandionis* group, and is characterized by the following combination of characters: dorsal-fin rays VII-I, 10; pectoral-fin rays 18–20; gill rakers 22 or 23; vertebrae 10 + 15; pyloric caeca 7–9; pored lateral-line scales 48–50 + 2; pungent opercular spine absent; maxillary mustache-like process absent; lingual teeth absent; a pair of ribs on last abdominal vertebra absent; tubercle on inner symphysis of lower jaw absent; orbital diameter 12.1–13.6% SL; lowerjaw length 13.4–15.1% SL; and body depth 16.4–18.5% SL. An in-situ ROV photograph of *E. elongatus* from Okinawa Island is provided. The genus *Epigonus* is represented in Japanese waters by six species including *E. elongatus*; *Epigonus atherinoides* (Gilbert, 1905); *Epigonus ctenolepis* Mochizuki and Shirakihara, 1983; *Epigonus denticulatus* Dieuzeide, 1950; *Epigonus fragilis* (Jordan and Jordan, 1922); and *Epigonus pectinifer* Mayer, 1974.

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Spawning environments and seasonal change in the appearance of the fluvial catfish, *Silurus tomodai*

Yoshiharu Sasaki* and Naoto Sawada

Abstract The spawning environment and seasonal changes in appearance of the Japanese silurid catfish *Silurus tomodai* were investigated in an upstream reach of a river in northern Mie Prefecture, central Japan. Eggs and larvae of the species were primarily found in highly localized areas around plant roots or in shallow accumulated litter at the water’s edge. *Silurus tomodai* was apparent from April to November, its activity increasing in the breeding season (from May to July). Laboratory feeding experiments indicated that juvenile proportions of lower jaw length to snout length, snout length to head length (HL), and interorbital width to HL may show greater variation than their mature counterparts.

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Records and genetic characteristics of the bitterling *Tanakia lanceolata* established in the Naruse River system, Miyagi Prefecture, Japan

Gen Ito*, Kaoru Hata, Jyun-ichi Kitamura and Yasunori Koya

Abstract Non-native populations of *Tanakia lanceolata* were found in the Naruse River system, Miyagi Prefecture (Northern Honshu), Japan. Examination of nucleotide sequences of

the mitochondrial DNA cytochrome *b* region indicated that the population was a genetic lineage of those naturally distributed in Western Honshu, Japan. In particular, a haplotype present in the Naruse River populations was consistent with one identified in populations in the Asahi and Kurashiki River systems, Okayama Prefecture.

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A management proposal for red-list species existing as native and non-native species in different areas of the same administrative region: a case study of masu salmon in the Chitose River, Hokkaido

Koh Hasegawa* and Sho Fukui

Abstract Populations of masu salmon (*Oncorhynchus masou*), included on the Red List of Threatened Species of Japan, as well as on the Hokkaido Prefecture Red List, are represented in the Chitose River, Hokkaido by both native and non-native fishes. A dietaryniche overlap between non-native masu salmon and native white-spotted charr indicates that the two species compete for food resources. Although a Red List species, the extinction risk for masu salmon is low. Accordingly, and where appropriate, masu salmon should be managed as a non-native, rather than endangered species.

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Food habits of young-of-the-year smallmouth bass in the lower Kizu River

Sho Kubo*, Taichi Fukuoka, Masato Ota and Masahide Yuma

Abstract Food habits of young-of-the-year (YOY) smallmouth bass (*Micropterus dolomieu*) were surveyed from late June to early August, 2019 in the lower Kizu River, Kyoto Prefecture, Japan, prey importance being evaluated using the Index of Relative Importance (IRI). Stomach content analyses of 83 individuals revealed that unidentified fishes (%IRI: 36.6%) and mayflies (*Baetis* spp.) (%IRI: 34.6%) were important prey items, with YOY smallmouth bass as small as 10–20 mm in standard length preying on fishes. The onset of piscivory at an early life stage, likely resulting in higher predator growth rates and lower winter mortality, may have aided the establishment of *M. dolomieu* in the Kizu River.

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Present status of the Channel Catfish *Ictalurus punctatus* in Lake Biwa and the outflowing Seta River

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Abstract The Channel Catfish *Ictalurus punctatus*, an invasive species introduced from North America in the 1970s, has since become established in several rivers and lakes in Japan, impacting negatively on aquatic communities and commercial fisheries. In Lake Biwa, the Channel Catfish was first captured in the north basin in 2001, a total of 820 individuals being captured subsequently until 2020, mostly in the lower reach from the Setagawa weir of the outflowing Seta River. In the latter, variously-sized individuals, including juveniles, have been captured every year since 2008, suggesting that the species can now be considered to have become established. It is unknown, however, whether or not the species is established in the north or south basins of Lake Biwa, due to the relatively low numbers of Channel Catfish caught in the lake. Efforts to eradicate the species from both the lake and river must be made to avoid future impacts on the local ecosystems and associated fisheries.

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Records of seven mugilid species from the Daito (Borodino) Islands, southern Japan

Ifue Fukuchi* and Katsunori Tachihara

Abstract The Daito (Borodino) islands, comprising three riverless oceanic islands (Minami-daito, Kita-daito and Oki-daito Islands) mostly bounded by rocky coasts, are the only southern Japanese islands located between the Ryukyu Archipelago and the Ogasawara islands. Identification of the mullet fauna on such oceanic islands should provide a clue to the dispersal ability of the family. Field surveys at Minami-daito and Kita-daito Islands were conducted in October 2019 and March 2020 resulting in five (*Chelon macrolepis*, *Crenimugil crenilabis*, *Ellochelon vaigiensis*, *Mugil cephalus*, *Oedalechilus labiosus*) and four mugilid species (*Ch. macrolepis*, *Cr. crenilabis*, *Neomyxus leuciscus*, *O. labiosus*) being collected from the respective islands. In addition, a specimen of *Moolgarda seheli* previously collected from Minami-daito Island, was found in the collection of the National Museum of Natural and Science (NSMT). All seven mugilid species are here recorded for the first time from the Daito Islands, supported by voucher specimens. A detailed description is provided for each species.

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A specimen of Lined Butterflyfish (Teleostei: Perciformes; Chaetodontidae) collected in 1932 from Fukushima, northern Japan, the northernmost record of the species

Keita Koeda*

Abstract A single adult specimen (205.1 mm standard length) of Lined Butterflyfish, *Chaetodon lineolatus* Cuvier, 1831, collected in 1932 from Onahama, Fukushima Prefecture, northern Japan, was discovered in the fish collection of the Department of Zoology, the University Museum, the University of Tokyo. The previous northernmost Japanese record of the species being the Boso Peninsula, Chiba Prefecture, most records from southern Japan have been of juveniles. Accordingly, the present specimen represents the first record of the species from the cold-water area off northern Japan (northernmost record of the species), and indicates that at least limited dispersal of tropical fishes to northern Japan occurred in the 1930's, when water temperatures were estimated to have been almost 2˚C lower than in recent years.

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Masu salmon redds constructed in a straight-line river channel: a case study in the Akka River, Iwate Prefecture, Japan

Takuya Kawashima*, Nobukazu Ohno, Miwa Yatsuya, Kei Sasaki and Koh Hasegawa

Abstract The distribution patterns of masu salmon redds were surveyed in Akka River, Iwate Prefecture, Japan from 2015 to 2018. Contrary to previous studies on spawning habitat preference of salmonid species, our results show that masu salmon redds tended to be constructed at straight-line stream channel. For the masu salmon, current velocity and water depth at the straight section might be suitable for redd construction in Akka River. In order to enhance fisheries resources through natural reproduction and hatchery programs, understanding the relationship between stream morphology and spawning habitat preference of target species is required for each population.

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