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Commemorative Paper

Masaki Miya*. 2024. Unraveling the phylogeny and ecology of fish through data-driven and exploratory approaches. Japan. J. Ichthyol., 71(1): 1–26. DOI: 10.11369/jji.24-006.

No Abstract Available.

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Original Papers

Makoto Furusho*, Gento Shinohara, Hisashi Imamura and Yoji Narimatsu. 2024. Occurrence of *Bolinichthys pyrsobolus* (Myctophiformes: Myctophidae) from the Pacific coast of Tohoku District and the Ogasawara Islands, Japan. Japan. J. Ichthyol., 71(1): 27‐34. DOI: 10.11369/jji.23-023.

Abstract Four specimens (53.4‐67.2 mm in standard length) of the genus *Bolinichthys* Paxton, 1972, caught off Fukushima Prefecture (Pacific coast of Tohoku District) and theOgasawara Islands, were identified as *Bolinichthys pyrsobolus* (Alcock, 1890) from thefollowing characters: 12 pectoral-fin rays; Vn at anterior border of eye, between nasal rosette and anterior edge of pupil; post-ocular photophores absent; distance between PVO1 andPVO2 less than that between Op1 and Op2; VLO slightly higher than midway between lateral line and pelvic-fin base; VO2 highly elevated, located near the line connecting PO4 and SAO1;infracaudal luminous gland reaching slightly ahead of AOp3; no luminous patches on dorsal and pelvic-fin bases; 3 or 4 luminous patches along the anal-fin base; and ventral edge of interopercle smooth. Although the number of gill rakers, one of the diagnostic characters ofthe species, had been previously established as 5 or 6 + 1 + 10‐13 = 17‐20, it was 7 + 1 + 14= 22 in one of the present specimens, a difference regarded here as intraspecific variation only, due to similar variation in congeners. Other characters in the specimen were closely consistent in the remaining three specimens. Multiple occurrences of *B. pyrsobolus* in Japanese waters have been recorded previously, but without clear evidence of correct identification. Accordingly, the present specimens represent the first reliable records of *B. pyrsobolus* from Japanese waters, that off Minami souma, Fukushima Prefecture being the northernmost for the species. Supracaudal and infracaudal luminous glands and luminous patches along the anal-fin base of one of the present specimens fluoresced distinctly light green under ca. 365 nm ultraviolet light, while fresh (before freezing). The new Japanese standard name “Hoshizora-mikazukihadaka” is proposed for the species.

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Akifumi Higuchi, Hiroshi Senou, Itaru Takaku and Hiroyuki Motomura*. 2024. First Japanese specimens of *Petroscirtes xestus* (Perciformes: Blenniidae: Nemophini) from Yakushima and Aka-jima islands. Japan. J. Ichthyol., 71(1): 35‑43. DOI: 10.11369/jji.23-027.

Abstract The saber-toothed blenny genus *Petroscirtes* Rüppell, 1830, including 11 valid species from the Indo-West Pacific Ocean, is characterized by the following combination of features: no fleshy blade-like crest on head; lower margin of gill opening not reaching to upper margin of pectoral-fin base; canine teeth in lower jaw without deep groove along anterior surface; dorsal and anal fins attached by membrane to body at caudal-fin base; dorsal fin with 10‑12 spines and 14‑21 soft rays; dorsal fin without notches between portions of spines and soft rays; anal fin with 2 spines and 14‑21 soft rays; caudal fin with11 rays, pectoral fin with 13‑16 (usually 13 or 14) rays, pelvic fin with 1 spine and 3 soft rays; all fin rays unbranched; and cirri present on head (absent only in *P. marginatus* Smith-Vaniz, 1976). Two specimens (34.1‑37.8 mm standard length; SL) of saber-toothed blenny, collected from Aka-jima Island (Kerama Islands) and Yaku-shima Island (Osumi Islands), Japan in 2010 and 2022, respectively, were subsequently identified as *Petroscirtes xestus* Jordan and Seale, 1906, having the following characteristics: fringed flaps on each side of chin; first dorsal-fin spine moderately elongate (shorter than second and fourth spines); 5 supratemporal pores; body depth at anal-fin origin 19.3‑20.5% of SL; a dark brown stripe from eye to caudal-fin base; a series of submarginal black spots on dorsal fin; a black spot between first two dorsal spines. An Indo-West Pacific species, *P. xestus* has previously been recorded from Mozambique to Micronesia, and in Japanese waters, only from Miyakojima Island (based on an underwater photograph). Therefore, the present specimens represent the first specimen-based records of *P. xestus* from Japan, that from Yaku-shima Island being the northernmost record for the species. The new standard Japanese name“Kazahana-nijigimpo” is herein proposed for the species.

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Daiki Uchida*, Seiya Kaneko, Seiji Usui, Kensaku Omori, Takahiro Ishitsuka, Kazuya Yamazaki, Toshio Furota, Shigetomo Suzuki, Hiroko Hanzawa, Hiromi Oikawa, Ken-ichi Yokoi and Kouki Kanou. 2024. Spatial variations in fish distribution in emergent plant zones in lakes and ponds of the lower Tone River system, eastern Japan. Japan. J. Ichthyol.,71(1): 45‑66. DOI: 10.11369/jji.23-024.

Abstract Emergent plant zones on the shores of temperate lakes and ponds function as an essential habitat for various fish species, although few studies have focused on spatial variations in fish fauna over a range of such habitat within a single river system. In order to promote a better understanding of conservation requirements for the fish habitat, the fish fauna of emergent plant zones was investigated by quantitative fyke-net sampling, with measurements of environmental

properties, at 19 sites in seven lakes and three ponds in the lower Tone River system, eastern Japan in June and August 2017. A total of 27 and 34 species, including commercially important and threatened species, were collected in June and August, respectively. A cluster analysis based on species composition at each site in each month showed that the fish assemblage was divided into three groups: six medium and large-sized lakes, a small lake and pond on the floodplain, and ponds in the hilly areas. The differences in species composition among the groups were partly related to different elevation, impacts of downstream weirs, and occurrence of introduced piscivorous species. In addition, analyses of the relationships between fyke net catches of eight abundant fishes and environmental variables at each site in the medium and large lakes at lower elevation (< 5 m) in each month, using a generalized linear mixed model, indicated that wave height and mud content in sediments, as well as emergent vegetation size, were significant determinants of abundance of most species. Accordingly, deliberate conservation and rehabilitation of emergent plant zones, taking such essential information into consideration, should be included in future conservation plans for fish habitats in the Tone River system.

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Jumpei Nakamura*, Morihiko Yamada and Hiroyuki Motomura. 2024. First specimen based Japanese record of the Green Chromis *Chromis cinerascens* (Perciformes: Pomacentridae) from Satsuma Peninsula, Kagoshima Prefecture, Japan. Japan. J. Ichthyol.,71(1): 67‑72. DOI: 10.11369/jji.23-035.

Abstract During an ichthyofaunal survey of the East China Sea coast of Satsuma Peninsula, Kagoshima Prefecture, Japan, a single specimen (58.6 mm standard length) of the Green Chromis *Chromis cinerascens* (Cuvier, 1830) (Perciformes: Pomacentridae) was collected from Kasasa, Minami-satsuma, at a depth of 8 m on 5 Apr. 2023. The specimen was characterized by the following combination of characters: dorsal-fin rays XIII, 11;pectoral-fin rays 19; tubed lateral-line scales 18; total gill rakers 27; body depth 48.3% of standard length; head and body greenish with yellowish hue; and fins translucent greenish. *Chromis cinerascens* is widely distributed in the eastern Indian and western Pacific oceans, but in Japanese waters has been previously recorded only from an underwater photograph taken off the south coast of Satsuma Peninsula (Bonotsu, Minami-satsuma). Therefore, the present specimen, described herein in detail, represents the first specimen-based Japanese record of *C. cinerascens*, as well as the northernmost record of the species. In addition, the identities of several underwater photographs of *C. cinerascens* taken off the coast of Satsuma Peninsula between 24 Oct. 2018 and 7 June 2023 were confirmed. The intermittent occurrence of *C. cinerascens* along the Satsuma Peninsula is thought to represent incidental migration from more southern waters via the Kuroshio Current. Although *C. cinerascens* is known to form large aggregations in shallow muddy areas within its usual distribution area, the sporadic occurrence and few individuals observed off Satsuma Peninsula suggest that the species is not currently reproducing in Japanese waters. The new standard Japanese name “Wakatake-suzumedai” is proposed for the species.

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Taishi Yadome*, Mao Sato and Yusuke Hibino. 2024. First record of *Pseudanthias hutomoi* (Perciformes: Serranidae) from Japan. Japan. J. Ichthyol., 71(1): 73‐79. DOI: 10.11369/jji.23-025.

Abstract A single specimen of the serranid fish *Pseudanthias hutomoi* (Allen and Burhanuddin, 1976), previously reported in the western central Pacific, from Brunei, Indonesia, Papua New Guinea, the Philippines, and Saipan, was recently collected from Ishigaki-jima Island, Ryukyu Archipelago, being the first record of the species from Japan. *Pseudanthias hutomoi* differs from its congeners in having the following combination of characters: 13‐15 dorsal-fin soft rays (usually 14); 6 or 7 anal-fin soft rays; 34‐37 gill rakers; scale rows between the lateral-line and middle of dorsal-fin spinous portion 2‐3.5; 42‐47 pored lateral-line scales; greatest body depth 2.9‐3.0 in standard length; head length 2.8‐3.2 in standard length; third dorsal spine subequal to others; anal-fin tip acute; and caudal fin lunate. The new standard Japanese name “Awayuki-hanadai” is proposed for the species based on the specimen collected from Ishigaki-jima Island, refers to the distinct white spots on the dorsum of females, which are obscure in males.

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Kaori Tsurui-Sato, Yukuto Sato*, Naotaka Katsube, Haruki Tatsuta and Kazuki Tsuji. 2024. Detection of functionally polymorphic region of opsin LWS-1 gene of guppy *Poecilia reticulata* using environmental DNA analysis. Japan. J. Ichthyol., 71(1): 81‐96. DOI: 10.11369/jji.23-017.

Abstract Environmental DNA (eDNA)-based analysis has been developed as an effective method for estimating fish fauna and detecting endangered and invasive species in water. Although the major marker genes in fishes and vertebrates are encoded in mitochondrial genomes, other genes on nuclear genome would also be feasible for eDNA studies. To address this possibility, we focused on the opsin *LWS-1* (long-wave sensitive opsin-1) gene of guppy *Poecilia reticulata*. We designed polymerase chain reaction (PCR) primers to amplify approximately 158 base pairs of guppy *LWS-1* to distinguish their functional polymorphic alleles *LWS-1*Ala (A-type) and *LWS-1*Ser (S-type). Using these primers and eDNA samples of Okinawa Island, Japan, we confirmed that the nuclear-encoded opsin gene of guppy was successfully sequenced using the Illumina MiSeq DNA sequencer. The analysis of obtained sequences demonstrated that red-shifted S-type allele was dominated in Senbaru Pond, where the turbidity was stably lower. On the other hand, both S- and A-types were detected in Makiminato River, where the turbidity was relatively high. Such association between functional allele variations of *LWS-1* and transparency of living water has also been reported in guppy of Trinidad and Tobago Islands. We suggest that thee DNA-based analysis can be applied to nuclear-encoded genes of fishes unless the biomass of target species is quite low. Our findings provide important advance in understanding molecular evolution and adaptation process in the wild populations of target

materials on the basis of meta-genomic approach.

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Notes

Junya Higuchi*, Seong-yong Kim and Toshio Kawai. 2024. Second record of the scaly prickled eelpout *Krusensterniella squamosa* from Japan. Japan. J. Ichthyol., 71(1): 97‑102. DOI: 10.11369/jji.23-013.

Abstract A single specimen of *Krusensterniella* (Perciformes: Zoarcidae), collected off Tsugaru Peninsula, Aomori, Japan, was identified as *Krusensterniella squamosa* Chernova, 2022, characterized by three pungent spines in the dorsal fin, 47 dorsal-fin spines, at least 101 dorsal-fin rays and 103 vertebrae, and previously known only from the holotype, collected off Iwate, Japan. The new standard Japanese name “Uroko-haregaji”, referring to the scaled body, is proposed for the species. Records of *Krusensterniella notabilis* from Japan are unlikely to be that species, since many identification sources for Japanese fishes in correctly described *K. notabilis* as having a broad scaled area on the body.

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Eishiro Hata, Seiya Kanai and Hiroyuki Motomura*. 2024. Northernmost record of *Pateobatis fai* (Dasyatidae) from southern Satsuma Peninsula, Kagoshima Prefecture, Kyushu, Japan. Japan. J. Ichthyol., 71(1): 103‑109. DOI: 10.11369/jji.23-026.

Abstract A single specimen (636.0 mm disc width) of the Pink Whipray *Pateobatis fai* (Jordan and Seale, 1906) (Dasyatidae) was collected off the south coast of the Satsuma Peninsula, Kagoshima Prefecture, Kyushu, Japan. Although the tail had been removed after capture, the specimen was subsequently identified based on disc morphology and molecular analysis. In Japanese waters, the species has previously been recorded only from Chichi Island (Ogasawara Islands), Okinawa Island (Okinawa Islands), and Iriomote Island (Yaeyama Islands), The present specimen, described here in detail, therefore representing the first record of *P. fai* from the Japanese mainland, and the northernmost record for the species.

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Kohji Mabuchi*and Kazuya Nishida. 2024. Spawning of *Gnathopogon caerulescens* on the sandy, gravel, and rocky shores of Lake Biwa, Japan: new findings about potential spawning sites. Japan. J. Ichthyol., 71(1): 111‑120. DOI: 10.11369/jji.23-028.

Abstract From March to May in 2021, 2022 and 2023, fish eggs attached to sand, rubble, and

interstices of stone walls on the shore of Lake Biwa, Yanagasaki, Japan, were collected, and DNA species identification performed for 120 eggs (8 from each of 15 egg populations). A 462-bp region of the mitochondrial cytochrome *b* gene was sequenced for 85 eggs, all 13 recognized haplotypes being identified as *Gnathopogon caerulescens*. Spawning behavior of *G. caerulescens* near the egg collection sites was observed and videorecorded. In former years (before stock numbers decreased), spawning on the lakeshore outside the vegetation zone had been observed, but detailed information on such is now unavailable. This report is a valuable record of potential spawning sites for future conservation efforts.

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Ryotaro Kobayashi*, Tsutomu Noda, Naoya Oomori, Akiya Satoh, Shun Satoh and Hiroshi Yamakawa. 2024. Food habits and seasonal dynamics of Kidako moray (*Gymnothorax kidako*) in Tateyama Bay, Japan. Japan. J. Ichthyol., 71(1): 121‑128. DOI: 10.11369/jji.23-036.

Abstract The diet and feeding habits of the Kidako moray eel *Gymnothorax kidako* in Tateyama Bay, Chiba Prefecture, Japan were investigated. Of 348 specimens collected in traps, 214 had empty stomachs. Prey of the remaining specimens included teleosts, cephalopods, crustaceans, and polychaetes, evidence of the carnivorous role of the former, feeding primarily on fishes. Notably, predation of tetrodotoxin-possessing species, such as the grass puffer, implied a potentially significant impact of *G. kidako* on reef ecosystems. Additionally, seasonal variations were apparent in the gastric emptying rate of *G. kidako*, suggesting differing feeding activities during the breeding and non-breeding seasons. To precisely evaluate the feeding habits of *G. kidako* in Tateyama Bay, future research should carefully consider sampling methods, so as to ensure a sufficiently large sample size for a comprehensive study.

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Shintaro Hashimoto*, Jumpei Nakamura, Reo Koreeda and Hiroyuki Motomura. 2024. Northernmost records of *Gymnothorax shaoi* (Muraenidae) from Yaku-shima Island, Osumi Islands, Kagoshima Prefecture, Japan. Japan. J. Ichthyol., 71(1): 129‑133. DOI:10.11369/jji.23-039.

Abstract Two specimens (604.0 and 647.0 mm total length) of *Gymnothorax shaoi* Chen and Loh, 2007 (Muraenidae), originally described from nine specimens from Taiwan, and currently known only from Japan, Taiwan, West Papua, and the Marquesas Islands, were collected from Yaku-shima Island, Osumi Islands, Kagoshima Prefecture, Japan. The only previously confirmed record from Japanese waters having been a single specimen from Amami-oshima Island, the Yaku-shima specimens, described herein in detail, represent the northernmost record for *G. shaoi*, and second Japanese record of the species.

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