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Full Papers

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Longitudinal changes in fish assemblage in a mountain stream, northeastern Kyushu, southern Japan

Keisuke Kimoto, Masaaki Kagehira, Kazuhisa Azechi and Kazuya Nagasawa

Abstract Longitudinal changes in fish assemblage were studied in the Ogata River and adjoining tributaries, northeastern Kyushu, southern Japan, in October 2003, and February and August 2004. A total of 18,015 individuals (14 species/subspecies representing 7 families) were recorded at 15 stations, by observers using snorkels. A major fish community transition was apparent from headwater stations with a simple assemblage dominated by amago salmon *Oncorhynchus masou ishikawae* and Chinese minnow *Phoxinus oxycephalus*, to downstream stations with more complex assemblages dominated by cyprinid fishes, such as Japanese dace *Tribolodon hakonensis* and dark chub *Candidia temminckii*. Multivariate analyses separated the 15 stations into three groups: headwater stations with a salmon/minnow-dominated assemblage (415–820 m altitude), a transition zone with a dace/chub/minnow-dominated assemblage (260–397 m), and downstream stations with a cyprinid-dominated assemblage (232–255 m). The fish assemblage structures were considered to be influenced by longitudinal environmental gradients, being significantly correlated with six environmental variables (topographic type and altitude, and stream gradient, mean wetted width, discharge and minimum daily mean water temperature) showing monotonic changes over the length of the stream investigated (16.3 km). On the other hand, cyprinid population densities did not show such changes, but declined within the transition zone downstream from erosion-control dams, suggesting that such densities were affected by smaller spatial scale factors, including dam-induced habitat degradation.

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Distribution patterns and habitat preferences of two *Nematalosa* species, including the influence of recent environmental changes and the occurrence of natural hybridization

Masato Uehara, Hideyuki Imai, Kensuke Iwamoto, Itaru Ohta, Akihiko Ebisawa, Tetsuo Yoshino and Katsunori Tachihara

Abstract Accurate descriptions of distribution and habitat are important for effective conservation. We examined the distribution patterns and habitat preferences of two closely related gizzard shads, *Nematalosa japonica* and *N. come*, based on specimens, published reports and fish market research in the Ryukyu Archipelago. Both species are distributed in southwestern Japan, *N. japonica* to the north of Okinawa-jima Island, and *N. come* in waters off Amami-ohshima Island and the Okinawa Islands, thereby being sympatrically distributed at Amami-oshima Island and Okinawa-jima Island. Natural hybrids between the two species, found only at Okinawa-jima Island indicated that later is a natural hybrid zone. Analysis using a random forest method and fish market research indicated that the occurrence of *N. japonica* was most affected by tidal flat type (coastal tidal flats), the species being dominant in restricted fishing grounds (Nakagusuku Bay and Haneji coastal waters) that include many coastal tidal flats. However, *N. come* occurrence was most affected by bottom sediment type, the species being dominant in a range of fishing grounds (Kin and Nago Bays, and Nanbu-higashi, Nago-higashi, Nakijin and Shioya coastal waters). Thus, the distribution pattern of the two species at Okinawa-jima Island was affected by environmental factors, such as tidal flat type, and area and bottom sediments. Our findings indicated a clear discontinuity in home range

between the two species in little-altered environments, whereas the home range overlapped in highly altered environments. Furthermore, the catch per unit effort (CPUE) of the two species has stabilized over a period of 25 years in little-altered environments, compared with a decline in highly altered environments. These findings indicated that the diminution of suitable sites was a possible factor in the recent appearance of natural hybrids and the decline in the Okinawan populations of both species. Accordingly, the two *Nematalosa* species are suggested as being of good indicators of the health and conservation of shallow areas, requirements such as tidal flats. Shallow habitats should be conserved to preserve healthy populations of the two species.

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Proposal of standard Japanese names for apogonid subfamilies, tribes and genera based on the new systematics proposed by Mabuchi and others in 2014

Kohji Mabuchi, Masayoshi Hayashi and Thomas H. Fraser

Abstract A recent revision of the systematics of the family Apogonidae recognized four subfamilies (two being new), 14 tribes (all new) and 38 genera, one of which was new. Fifteen of the genera recognized had formerly been subgenera of *Apogon* or *Rhabdamia*, and lacked standard Japanese names, except for *Apogonichthyoides*, *Nectamia sensu stricto* and *Zoramia*. All apogonid subfamilies, tribes and genera occurring in Japanese waters are herein given fixed standard Japanese names. Based on the rules operationally proposed here, twenty-five new standard Japanese names were given to three subfamilies, 13 tribes and 9 genera, a name-bearing type for each standard Japanese name (at generic level for family, subfamily and tribe level taxa, and a specific

level for genera) being designated for each higher taxon occurring in Japanese waters. Additionally, a new standard Japanese name, Senou-hikari-ishimochi, was proposed for a Japanese species, *Siphamia senoui*, with the holotype designated as the type for the Japanese name.

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Short Reports

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Mitochondrial and nuclear DNA evidence for the hybrid origin of wild tetsugyo in Yutori-numa Pond, Miyagi Prefecture, Japan

Teruki Tomizawa, Takashi Kijima, Kunihiro Futami, Kiyotaka Takahashi and Nobuaki Okamoto

Abstract A genetic analysis of wild-caught tetsugyo from Yutori-numa Pond, Miyagi Prefecture, a long-finned fish of uncertain origin designated as a National Natural Monument in Japan, demonstrated that some specimens were hybrids of goldfish (*Carassius auratus*) and crucian carp (genus *Carassius*). Phylogenetic analysis of sequences from part of the D-loop region of mitochondrial and nuclear DNA of 87 Yutori-numa tetsugyo indicated that 66 belonged to the goldfish group and 21 to the Japanese crucian carp group, subsequent PCR-RFLP analysis of *c-myc* gene revealing three different restriction fragment digest profiles, 21 and 60 specimens possessing goldfish or Japanese crucian carp genes, respectively, and the remaining 6, both genes, indicating their hybrid origin.

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First Japanese record of *Neobythites bimaculatus* (Ophidiiformes, Ophidiidae) collected off Zanpa Cape, Okinawa Prefecture, southern Japan

Shinpei Ohashi, Takashi P. Satoh and Gento Shinohara

Abstract Three specimens (39.9–161.0 mm SL) of an ophidiid genus *Neobythites*, were collected off Zanpa Cape, Okinawa Prefecture, southern Japan, in December 2012. The specimens were identified as Twospot cusk *Neobythites bimaculatus* Nielsen, 1997 in having two spines on the hind margin of the preopercle, pelvic fin rays not reaching the anus and two ocelli on the middle of the dorsal fin. Nielsen (2002) referred to a small specimen (73 mm SL) having two faint dark spots on the anal fin. The smallest specimen (39.9 mm SL) reported here, although smaller than Nielsen's specimen, has no spots on the anal fin. This species was previously known from New Caledonia, Australia and the South China Sea. These specimens are the first record of the species from Japan.

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