

Fishes of Yaku-shima island : a world heritage island in the Osumi group, Kagoshima prefecture, southern Japan

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Preface

The Kuroshio Current, originating in the tropical western North Pacific Ocean east of the Philippines, flows northward towards the main islands of Japan via the Ryukyu Islands. Senou et al. (2006) studied the fish faunas of the Ryukyus and other islands in southern Japan by using observation records of fishes stored in a fish image database, FishPix (<http://fishpix.kahaku.go.jp/fishimage-e/index.html>). Their analysis clearly showed two major roles for the Kuroshio Current, firstly as a conveyor for fishes being transported from the tropics to southern Japan and secondly as a strong barrier that makes it difficult for warm-temperate fishes living along the coasts of Honshu, Shikoku, Kyushu and associated small islands to move southward to the Ryukyu Islands. However, their conclusion needs to be corroborated by detailed studies that utilize morphological and genetic analyses of local populations of fishes.

In April 2007, 11 ichthyologists, Keiichi Matsuura, Hiromitsu Endo, Yukio Iwatsuki, Yoshiaki Kai, Seishi Kimura, Izumi Kinoshita, Hiroyuki Motomura, Mutsumi Nishida, Takashi Minami, Hiroshi Senou and Tetsuo Yoshino, joined forces to study further the influence of the Kuroshio Current on fish faunas in southern Japan. This research, called the Kuroshio Project, was supported for three years by Grant-in-Aids for Scientific Research (A: 19208019) by the Japan Society for the Promotion of Science (JSPS). This team studied several groups of fishes (e.g., atherinids, carangids, gobiids, serranids and sparids), occurring both in temperate and tropical waters, to determine the two major roles of the Kuroshio Current by using DNA analysis with additional morphological data (these studies will be published elsewhere). During the Kuroshio Project, fishes of Yaku-shima Island were heavily studied by this team of ichthyologists because fishes of this island have been poorly studied in terms of zoogeography and taxonomy, and the fish fauna of this island comprises temperate and tropical elements. Accordingly, the number of observation records of fishes from Yaku-shima Island in Senou et al. (2006) was relatively smaller than those from another 11 sites from southern Japan. Yaku-shima Island is located at an interesting point in terms of the zoogeography of Japanese fishes. The Kuroshio Current courses northward along the East China Sea side of the Ryukyu Islands and then flows into the Tokara Straits and returns to the Pacific side immediately south of Yaku-shima Island. This suggests that a study on fishes of Yaku-shima Island may provide a good opportunity to clarify how the Kuroshio Current affects fish faunas in southern Japan.

The JSPS project team sent two expeditions to Yaku-shima Island in the summers of 2008 and 2009. Their collection and analysis of shallow-water fishes around the Island resulted in this book that comprises six papers about the fishes of Yaku-shima Island. Although the JSPS Kuroshio Project produced many interesting zoogeographical and taxonomical findings on fishes, it also demonstrated the need for further studies on fishes and marine invertebrates in order to clarify the influence of the Kuroshio Current on marine faunas in southern Japan. As the current Kuroshio Project will expire at the end of March 2010, a new research team was organized in April 2009 to focus on fishes, marine invertebrates and marine microfossils. This new Kuroshio Project will continue for four more years to study the role of the Kuroshio Current with respect to the zoogeography, taxonomy and phylogeography of major groups of marine organisms in southern Japan.

Senou, H., K. Matsuura and G. Shinohara. 2006. Checklist of fishes in the Sagami Sea with zoogeographical comments on shallow water fishes occurring in the coasts under the influence of the Kuroshio Current. *Memoirs of the National Science Museum, Tokyo*, (41):389–542.

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