

2.4.12 Laboratory : Marine Stock-Enhancement Biology

Member:	Professor	(Nakabo, Tetsuji, Dr. Agric. Sci. Ichthyology, Kyoto University Museum)
	Associate Professor	Tagawa, Masatomo
	Assistant Professor	Nakayama, Kouji
	Doctor's program	1
	Master's Program	6
	Undergraduate	3

A. Research Activities (2009.4-2010.3)

A-1. Main Subjects

a) Early life history of fishes

Occurrence, distribution, food habits and growth of larvae and juveniles in coastal marine fishes as flounder, sea bass, sea breams, tunas, and mackerels have been observed in the sea, being combined with physiological laboratory experiments concerning endocrine, osmoregulatory, and digestive functions. Recent particular focuses have been placed on the stock structure and impacts of mass-release of juvenile flounder on coastal ecosystem, and origin of the Ariake sea bass population related to its amphidromous life history.

b) Studies of systematic ichthyology

We are proceeding to the systematic study of marine fishes based on the specimens from the Indo-Pacific region. We have another project to study the taxonomy of some common coastal fishes cooperated with the study of early life histories of them (supervised by Prof. T. Nakabo, Kyoto University Museum).

c) Endocrinological study of fish development

Controlling mechanisms of fish metamorphosis, neoteny and migration are investigated, mainly during early life history using endocrinological methods. Involvements of maternal hormones (thyroid hormones and cortisol contained in unfertilized eggs) in early survival and osmoregulation before the onset of larval endocrine organ are examined in flounders, ice goby, and tilapia.

A-2. Publications and presentations

a) Publications

Original Papers

- Suzuki K. W., K. Nakayama, M. Tanaka: Horizontal distribution and population dynamics of the dominant mysid *Hyperacanthomysis longirostris* along a temperate macrotidal estuary (Chikugo River estuary, Japan). *Estuarine, Coastal and Shelf Science* 83 (4); 516-528, 2009.
- Yagishita N., M. Miya, Y. Yamanoue, S. M. Shirai, K. Nakayama, N. Suzuki, T. P. Satoh, K. Mabuchi, M. Nishida and T. Nakabo: Mitogenomic evaluation of the unique facial nerve pattern as a phylogenetic marker within the perciform fishes (Teleostei: Percomorpha). *Molecular Phylogenetics and Evolution* 53; 258-266, 2009.
- Suzuki K. W., R. Sugimoto, A. Kasai, K. Nakayama, M. Tanaka: Dynamics of particulate organic matter in the estuarine turbidity maximum of the Chikugo River estuary, Ariake Sea, in summer: Influence of the fluctuation of freshwater discharge. *Bull. Jpn. Soc. Fish. Oceanogr.* 73(3); 149-160, 2009.
- Suzuki S., T. Kawashima, T. Nakabo: Taxonomic review of East Asian *Pleuronichthys* (Pleuronectiformes: Pleuronectidae), with description of a new species. *Ichthyol. Res.*, 56; 276-291, 2009.
- Nakamura M., T. Seikai, M. Aritaki, R. Masuda, M. Tanaka, M. Tagawa: Dual appearance of xanthophores, and ontogenetic changes in other pigment cells during early development of Japanese flounder *Paralichthys olivaceus*. *Fisheries Science* 76; 243-250, 2010.

b) Conference and seminar papers presented

- Symposium on heterochrony in aquatic organisms, Ocean Research Institute, University of Tokyo : 1
- The Crustacean Society Summer Meeting and the 47th Annual Meeting of the Carcinological Society of Japan: 1
- 2009 Annual Meeting of the Ichthyological Society of Japan: 1
- 2009 Autumn meeting of Kinki Branch of the Japanese Society of Fisheries Science: 1
- The Japanese Association of Benthology & The Plankton Society of Japan Joint Meeting, 2009: 1
- 6th International Charr Symposium: 1
- the Autumn Meeting of the Japanese Society of Fisheries Science, 2009: 1
- 2010 Annual Spring Meeting of the Japanese Society of Fisheries Science : 2

A-3.Off-campus activities

Membership in academic societies

- Tagawa, Masatomo : The Japanese Association of Benthology & The Plankton Society of Japan Joint Meeting, Hakodate
- Nakayama, Koji : The Ichthyological Society of Japan (committee of information technology)

Research grants

1. Grants-in-aid for Scientific Research(KAKENHI)

- Scientific Research (C) : Tagawa, Masatomo : Mechanisms and prevention of flatfish malformation - studies on optimal speed before metamorphosis.
- Scientific Research (C) : Tanaka, Masaru (Collaborator; Tagawa) : Study on the origin of right-left asymmetry by the use of metamorphosing process in an ancestral flatfish, *Psettodes erumei*.
- Scientific Research (B) : Nakabo, Tetsuji (Collaborator; Nakayama) : Historical biogeography of marine fishes of Japan and adjacent waters correspondent with oceanographic structure.
- Scientific Research (C) : Kinoshita, Izumi (Collaborator; Nakayama) : Did reclamation works of the Isahaya Bay cause the environmental problems of the Ariake Sea?

A-4.International cooperation and overseas activities

Visiting Research Scholars

- Guest Scholar 1 (Korea)

B.Educational Activities(2009.4-2010.3)

B-1.On-campus teaching

a) Courses given

- Undergraduate level: Marine Physiology (Tagawa), Marine Ecology (Tagawa, Nakayama), Laboratory Course in Resource Biology I and II (Tagawa, Nakayama), Seminar in Fisheries Science (Tagawa, Nakayama), Course in Marine Bioscience and Technology I (Tagawa, Nakayama), Animal Physiology (Tagawa), Introductory Laboratory Course in Bioresource Science (Tagawa, Nakayama),

- Overview of Bioresource Science III (Tagawa, Nakayama),
Laboratory Course in Forest-Sato-Sea Linkage Science C
(Nakayama), Introduction to Marine Biology (Tagawa),
Physiology of Insects, teleosts, and mammals (Tagawa)
- Graduate level: Seminar in Marine Resource Biology (Tagawa, Nakayama),
Laboratory Course in Marine Resource Biology (Tagawa,
Nakayama), Biology of Marine Resources (Tagawa)

B-2.Off-campus teaching etc.

Open lectures, etc.

- Tagawa, Masatomo: Lecture at Special Exhibition 2009 on CHIRIMEN-MONSTER,
Kishiwada Nature Museum, Lecturer

C.Other Remarks

- Tagawa, Masatomo: External reviewer of a research project sponsored by Fisheries Research
Agency (Stress map of AYU in Shiga prefecture), External scientific advisor of a research
project sponsored by Ministry of Agriculture, forestry, and fisheries (Seed production for
release using water field in Shiga prefecture)