ECOLOGY, PHYSIOLOGY, AND SYSTEMATICS OF FISHES

Lab. Marine Stock-Enhancement Biology
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For sustainable utilization of diverse bio-resources in the sea, it is critical to accumulate the basic knowledge on ecology, physiology and morphology of the organisms in the target habitat. Our laboratory is conducting research on life history, early development and systematics, mainly on teleosts, with special emphasis on the relationship between organisms and environment. Our goal is to contribute to the effective utilization of bio-resources of the sea, without adversely affecting the biodiversity.

Ecological study on the target species of "stock enhancement"

"Stock enhancement" is a method to increase the bio-resources by releasing juvenile fish and let them to grow up by utilizing the remnant capacity of the sea. To accomplish this purpose effectively, the ecological characterization of the target species is indispensable. Early life history and population structure are being analyzed on target species including Japanese flounder and spotted halibut.


Rearing experiment


Spotted halibut juvenile

Connection between river and the sea; estuarine ecology

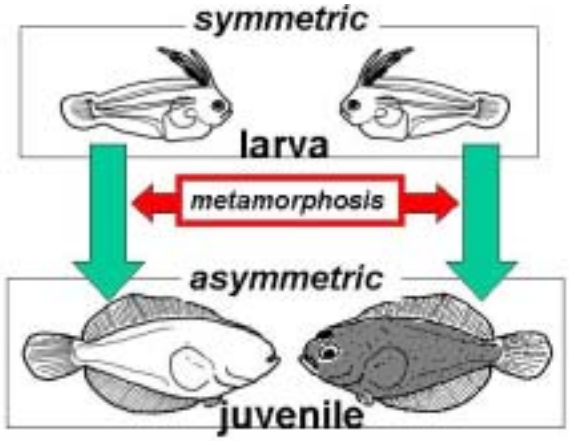

Etu (grenadier anchovy)

←Chikugo River estuary

An estuary is a complicated area receiving various effects from the rivers and the sea, and therefore possesses rich productivity and biodiversity. To elucidate the mechanisms of the estuary, we are pursuing ecological studies on diadromous fish and the fish utilizing estuary as their nursery, using Ariake bay and Kozagawa River as study fields.

Endocrinology of fish metamorphosis

Various teleosts undergo drastic transformation (metamorphosis) from larval form to adult form as is well known in frogs. For example, the left-right asymmetry of flatfish is established during metamorphosis from symmetrical larvae. The mechanisms controlling the asymmetrical morphogenesis are being clarified using endocrinological and physiological methods.



Phylogeny and taxonomy of fishes

When the research major is phylogeny and taxonomy of fishes, Prof. Nakabo supervises the graduate and ungraduate students, and they are usually doing research in the Kyoto University Museum.

Keywords

Metamorphosis, hormone, organismal physiology, early life history, population structure, Ariake bay, Paralichthys, estuary, phylogeny

Recent Publications

Pseudoalbinism and ambicoloration in hatchery-reared pleuronectids as malformations of asymmetrical formation.
Aritaki M, Tagawa M (2012).
Fisheries Science, 78: 327-335.

Genetic divergence among three morphs of *Acentrogobius pflaumii* (Gobiidae) around Japan and their identification using multiplex haplotype-specific PCR of mitochondrial DNA.
Matsui A, Nakayama K, Kai Y, Yamashita Y (2012).
Ichthyological Research, 10.1007/s10228-012-0276-0.

***Oncorhynchus kawamurae* "Kunimasu" , a deepwater trout, discovered in Lake Saiko, 70 years after extinction in the original habitat, Lake Tazawa, Japan.**
Nakabo T, Nakayama K, Muto N, Miyazawa M (2011).
Ichthyological Research, 58: 180-183.

Genetic and morphological differences between *Sebastes vulpes* and *S. zonatus* (Teleostei: Scorpaeniformes: Scorpaenidae).
Muto N, Kai Y, Nakabo T (2011).
Fishery Bulletin, 109: 429-439.

Genetic variation and population structure of the Pacific cod *Gadus macrocephalus* in Korean waters revealed by mtDNA and msDNA markers.
Gwak W-S, Nakayama K (2011).
Fisheries Science, 77: 945-952.

Faster growth before metamorphosis leads to a higher risk of pseudoalbinism in juveniles of the starry flounder *Platichthys stellatus*, as suggested by otolith back-calculation.
Nishikawa T, Aritaki M, Shimizu D, Wada T, Tanaka M, Tagawa M (2010).
Fisheries Science, 76, 827-831.

Zoogeography of Taiwanese fishes.
Nakabo T (2009).
Korean J. Ichthyol., 21(4): 311-321.