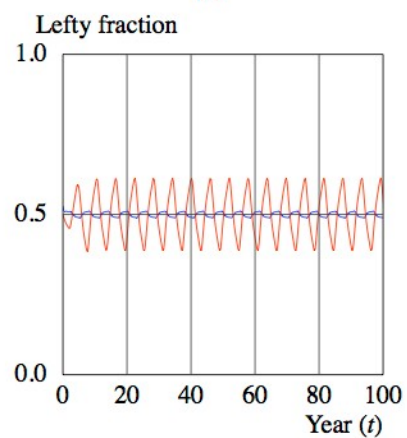
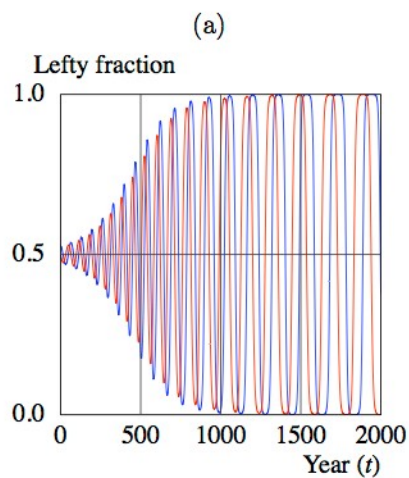
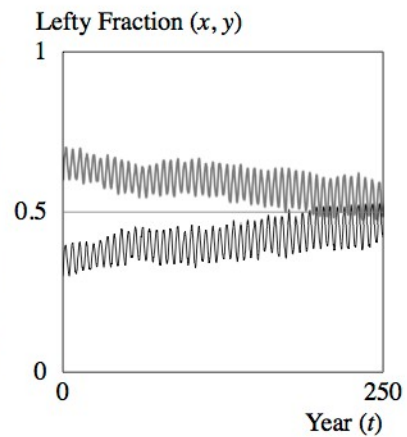
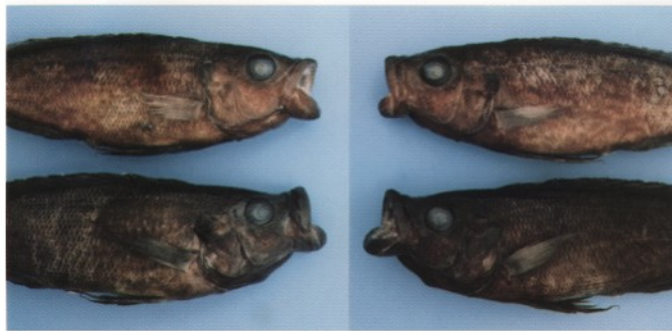


# Theoretical study of dynamics in ecosystem and evolution

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(a) Lefty morph (above) and righty one (below) of scale eater.

(b) Dynamics of lefty morphs fraction in competitors system.

(c) Dynamics of lefty morphs fraction in prey-predator system without frequency dependence.

(d) Dynamics of lefty morphs fraction in prey-predator system with frequency dependence.

My main research theme is modeling dynamics and genetic system of lateral asymmetry in fish.

Significance of periodic oscillation of lefty fraction is distinguished by Fourier transform.

In models of 1 species, 2 competing species, and prey predators, oscillation condition and period are investigated. Oscillation facilitates the coexistence of two laterality morphs, as well as two competing species.

Segregation ratio of laterality morphs indicates absence of dominant homozygote. In models with the incompatibility gene, oscillation of laterality bimorphism enhances the evolution of incompatibility between genes with dominant laterality gene, which leads to decrease of homozygotes of dominant laterality.

Keywords : Lateral asymmetry, frequency dependent selection, oscillation, genetic incompatibility, evolution