Bioluminescence and mating behaviour in pony fish, *Leiognathus nuchalis*

Azuma N¹, Furubayashi C¹, Shichiri T¹, Wada M², Mizuno N³, Suzuki Y³
¹ Faculty of Agriculture and Life Science, Hirosaki University, Hirosaki 036-8561, Japan
² Ocean Research Institute, The University of Tokyo, Tokyo 164-8639, Japan
³ Fisheries laboratory, The University of Tokyo, Shizuoka 431-0211, Japan

Some leiognathid species were well known as the luminous fishes which had light organ with symbiotic luminous bacteria and their light emissions were observed in the fields, such as *Leiognathas elongatus* (Sasaki et al. 2003). However, it is uncertain still on what kind of behavioural and/or ecological function such the luminescence has. Luminescence of *L. nuchalis* which is a most popular pony fish in Japanese coastal area has not observed with naked eyes and CCD cameras. We attempted to detect their luminescence and to clear the functions of its bioluminescence in the laboratory. In addition to confirming the existence of the light emission, we focused on seasonal change and diurnal rhythm of luminescence in this species. The fishes were kept in 500L transparent circular aquarium under constant dark condition. The experiments were conducted three times during breeding season and inbreeding season, respectively. Luminescence was measured by high sensitive photometer that is set at side of aquarium. The luminescence from adult fishes was detected only during breeding season. After breeding season, the fishes did not emit the light. Frequency of light signals increased at night, especially midnight (2000-2400) that is spawning period. Little light emission was observed in daytime. These results supported that there were any relation between light emission and spawning behaviour.