

## MARK-RELEASE-RECAPTURE EXPERIMENTS OF KURUMA PRAWN BY USING MICROSATELLITES AND MITOCHONDRIAL DNA MARKERS

**Takuma Sugaya\***, Syoji Nakano, Masakazu Oka and Keiichi Mushiake

Kamiura station, National Center for Stock Enhancement, FRA,

Oita, Japan 879-2602

tsugaya@fra.affrc.go.jp

Kuruma prawn *Marsupenaeus japonicus* is a marine shrimp widely distributed from temperate to tropical zones of the world. While this prawn is one of the most famous fishery animals in Japan, the fishery yield has rapidly declined during late 1960's. From such a situation, stock enhancement programs with annual release of approximately 200 million hatchery-reared individuals have been promoted mainly in southern Japan for about 30 years. However, it has been difficult to assess the precise stocking effectiveness because of the lack of suitable tags which can distinguish the introduced prawns from wild ones at all subsequent life history stages.

The microsatellites and mitochondrial DNA markers were quite variable genetic markers. Especially, the sequence analysis of the mtDNA control region can show extremely rare haplotypes. Similarly, a combination of microsatellites DNA loci can provide sufficiently rare genotypes that can not only identify the individuals taken randomly from wild but also estimate the genetic relatedness among the ones with unknown pedigree. Furthermore, the recent developments of the equipment for molecular genetics are offering more feasible methods for the mass analysis of DNA. Therefore, we have examined the feasibility of the microsatellites and mitochondrial DNA markers as the tags for released kuruma prawns by mark-release-recapture experiments.

Approximately 100,000 hatchery-reared prawns with the total length of about 5 cm were released into an estuary in early August. They were derived from 6 wild copulated females caught near the releasing area. Five microsatellites DNA markers and the 539 bp nucleotides sequences in mitochondrial DNA control region were used to identify the females and their offspring. The experimental catch was carried out for about 3 month by the trawl and the gill nets, and released prawns were continuously detected by the DNA markers. In consequence, 20 released prawns were found within 295 individuals, showing the possibility of the DNA markers as the tags in the stock enhancement program of the kuruma prawn.