

Field studies on Aquaculture in Ocean University of China, China

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1. Field studies on Aquaculture

Ocean University of China (formerly : Ocean University of Qingdao) is a comprehensive university under the direct jurisdiction of the State Ministry of Education, offering coursework in the fields of Economics, Liberal Arts, Medical Sciences, Management, Law, Sciences, Engineering and Agronomy. Ocean University of China (OUC) is located in Qingdao, a renowned summer resort and an attractive historic tourist city of scenic beauty and temperate climate. OUC consists of 18 colleges and departments. There are over 15,000 registered students at OUC including 2,100 Master's and Doctoral graduate students and over 500 international students. Among the excellent facilities for teaching and research, OUC owns "Dong Fang Hong 2", a research vessel of a 3,500-ton displacement for both teaching and scientific research. One of the major activities of OUC has been its extensive participation in international academic exchanges. Since 1958, OUC has accepted international students, and now has developed close cooperative relations with over 30 universities.



Aquaculture department was founded in 1946 and was the first college aquaculture major in china. Aquaculture discipline is one of the national key disciplines in the university, and has a key Lab of Aquaculture Research of National Education Ministry, a aquaculture institute and a microalgae stock pool, with the master degree, doctoral degree, postdoctoral programs in Aquaculture, and Hydrobiology specialty. Staffs have 40 people. 13 Professors, 11 Associate Professors, 16 Lectures and

Engineers. Now, We have 6 main research fields : Fish Culture, Invertebrate Aquaculture, Disease control in Aquaculture, Genetics and Breeding science, Systematic Ecology in Aquaculture, Nutrition and Feed studies of Aquatic animals.

In the recent years, remarkable progress has been made in aquaculture in the coast of China, and China is the world's leading kelp, shrimp, oyster, kelp and scallop producing nation today. The total mariculture production in China in 2002 is about twelve millions ton. However, the shortage of culture seeds, deterioration of water quality, mass mortality, and deterioration of culture seeds performance in recent China began to retard the development of mariculture. To achieve sustainable mariculture, the field studies on aquaculture in Ocean University of China are focused on : 1) Improvement in techniques of artificial seeds production, 2) development of excellent culture species and strains, 3) development of seed production of new culture species, 4) intensive culture techniques, 5) preventive techniques against diseases, 6) improvement of artificial compound feed, and 7) techniques for polyculture.



2. Microsatellites in the Pacific abalone : development, inheritance and applications

Eight polymorphic microsatellites were isolated from the Pacific abalone. The inheritance mode of seven microsatellite markers was investigated in four families. Four of the seven loci showed the presence of null alleles. Six of the 56 parental alleles were null alleles (10.7%). By microsatellite analysis, offspring from 4 full-sib families were

unambiguously discriminated in the neighbor-joining dendrogram, demonstrating that the microsatellite markers might be capable of discriminating between related and unrelated abalone larvae in a situation where no pedigree information is available. To assess the utility of microsatellite markers for detecting changes of genetic diversity in hatchery strains, we used six microsatellite markers to estimate the level of genetic diversity within three hatchery strains and two wild populations of Pacific abalone. Compared to wild populations, all the hatchery strains showed less genetic variation as revealed in lower number

of alleles and lower expected heterozygosity, indicating that bottleneck effects occurred when each strain was founded. Significant differentiation was found between the hatchery strains, and between the hatchery strains and wild populations, and no obvious difference was detected between the wild populations. The results obtained in this study indicate that it is necessary to genetically characterize the abalone strains that are being released every year in order to monitor the effect on the genetic diversity of wild populations.