

Nithas Thipkonglars, Lt. 2010: Developing some Techniques for Using Chironomid Larvulae (Diptera: Chironomidae) in Aquaculture. Doctor of Philosophy (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Associate Professor Wara Taparhudee, Ph.D. 234 pages.

Chironomid (Diptera: Chironomidae) larvulae are newly hatched larvae from eggs. The larval stage of chironomid represents an important natural food for many freshwater fish in natural water bodies, including hobbies fish in aquaculture. Chironomid larvae production mainly collected from natural. The main problem in outdoor culture is unstable in its production causing from diverse natural species, and uncontrollable oviposition in an adult stage. Thus this research aimed to develop chironomid larvulae producing, and using in aquaculture purposes. The study consisted of 5 experiments. The first experiment is surveying a year round monitoring on chironomid diversities and changes in the small reservoir in Ayutthaya province. The sampling was taken every 2 months by using emergence traps. The second experiment, selection of a good performance chironomid species for aquaculture, effect of breeding factors, chironomid egg embryology, and relation between chironomid egg-mass length and fecundity were undertaken. The third experiment, effects of stocking density in chironomid larvae rearing to maturity was evaluated. The fourth experiment, low temperature preservings of chironomid egg and larvulae was conducted. The fifth experiment, the nutritive values study and using of chironomid larvulae as a natural food in climbing perch *Anabas testudineus* larvae nursing were studied. All experiments were conducted at Inland Aquaculture Research Institute in Phra Nakorn Si Ayutthaya among January 2008 to January 2009.

The first experiment result, twenty-two species of chironomids belonging to 15 genera of 2 subfamily were found, species richness and abundant were not different between sampling months. Only water pH showed highly correlated with species richness, but another factor showed low correlation. The second experiment, *Chironomus fuscipes* was the optimal species for culture under laboratory conditions, which light characteristics and sex ratio were affected to oviposition parameters, but oviposition preference in water was not detected when increased natural food levels. The third experiment, the optimal stocking density in chironomid larvae rearing to maturity was 1 individual/cm². The fourth experiment showed chilling preservation with embryonic solution and 1% trehalose were suitable protective media for chironomid egg and larvulae preservations. Finally, the nutritive values of chironomid larvulae contains completely, survival and growth rates of climbing perch larvae reared with chironomid larvulae were not different with rotifers.

Student's signature

Thesis Advisor's signature